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ABSTRACT

The document, nearly half of which consists of appendixes, presents the final report on Phase II of a 2 year study to evaluate the process of mainstreaming handicapped preschool children into Project Head Start. During the second year (Phase II) of the study, baseline and posttest developmental assessments were conducted on approximately 400 Head Start handicapped children, 350 non-Head Start handicapped children, and 150 handicapped children not enrolled in any programs, in an attempt to assess the relative impact of the Head Start handicapped effort. The report covers such aspects as study design issues, measurement issues, sampling procedures, outcome variables, child/family background characteristics, program/staff characteristics, and between and within group analysis of study outcome variables. The results of two reliability substudies conducted to ascertain the degree of confidence that may be invested in data from key dependent variables are reported, and the issue of handicap severity as an important explanatory variable is discussed along with how severity was measured for the purposes of the evaluation. Classroom structures are examined along with staff characteristics (such as background, preparation, and attitudinal orientation with respect to the provision of services to handicapped children). Among the 13 appendixes are various instruments, forms, and criteria used in the study. (DLS)

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# EVALUATION OF THE PROCESS OF MAINSTREAMING HANDICAPPED CHILDREN INTO PROJECT HEAD START

## Phase II Final Report

December 19, 1978

Prepared for:

Administration for Children, Youth and Families
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The conclusions presented in this report are those of the Contractor and do not necessarily reflect the views of the U.S. Department of Health, Education, and Welfare or any other agency of government.

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Ronald J. Vogel
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# 1

## INTRODUCTION

### Background

Since its inception in 1965, Project Head Start has always encouraged the enrollment of handicapped children. Although initially an informal enrollment policy, Head Start's involvement with special children became a legal mandate with the passage of the Economic Opportunity Amendments of 1972 (Public Law 92-424). This mandate was strengthened by the Head Start, Economic Opportunity, and Community Partnership Act of 1974 (Public Law 93-644) which required "that for Fiscal Year 1976 and thereafter no less than 10 percentum of the total number of enrollment opportunities in Head Start programs in each State shall be available for handicapped children ... and that services shall be provided to meet their special needs."[1/] Furthermore, the intent of the mandate is to emphasize services to those children who are "substantially or severely handicapped."

For each handicapped child identified and enrolled in Head Start, the Administration for Children, Youth and Families has formulated objectives and performance standards to:

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[1/] Handicaps served by Head Start include blindness, visual impairment, deafness, hearing impairment, physical (orthopedic) impairment, mental retardation, speech impairment, health or developmental impairment, serious emotional disturbance, and specific learning disability.

- improve the child's health and physical abilities, including appropriate steps to correct present physical and mental problems and to enhance every child's access to an adequate diet; improve the family's attitude toward future health care and physical abilities;
- encourage self-confidence, spontaneity, curiosity, and self-discipline which will assist in the development of the child's social and emotional health;
- enhance the child's mental processes and skills with particular attention to conceptual and communication skills;
- establish patterns and expectations of success for the child which will create a climate of confidence for present and future learning efforts and overall development;
- increase the ability of the child and the family to relate to each other and to others; and
- enhance a sense of dignity and self-worth within the child and his family.

These goals reflect the fact that even for its handicapped children, Head Start program eligibility is still in large part a function of family income. Ninety percent of all handicapped children enrolled to meet the 10 percent handicap mandate must come from low-income families or from families receiving public assistance. Head Start has not only targeted services to the substantially or severely handicapped preschool child, it has also directed its attention at those handicapped children whose economic circumstances often compound the negative effects of developmental delays and disabilities.

Planning and providing services to an economically deprived handicapped child is perhaps among the most formidable tasks an educator or child welfare specialist could undertake. It is not enough to plan for services and programs related only to the child's primary handicap. As the goal statements presented above would indicate, economically disadvantaged children also are often in need of services designed to ameliorate poor physical health, malnutrition, poor social skills, poor self-concept, and a lack of parenting skills in his/her family group. Head Start's approach to early intervention for the preschool handicapped child is consequently broad-based. In addition to an educational component, Head Start includes in each child's plan of services a health component (medical, mental, and dental), a nutrition component, a social services component, and a parental involvement component. Head Start must be viewed, therefore, as more than a preschool compensatory education program. It is a comprehensive child development program that embraces the child, the family, and the community.

Another key characteristic of Head Start's approach to service delivery vis-a-vis the handicapped is its emphasis on "mainstreaming." Mainstreaming has various definitions.[1/] However, the basic goal of mainstreaming is to provide handicapped children social experiences with their non-handicapped peers (and vice-versa). Such experiences are believed to reduce the negative effects of segregated classrooms/facilities on the social, emotional, and cognitive development of handicapped children. In brief, a mainstreaming experience is designed to increase a handicapped child's competence in adjusting to and coping with his/her disability in a society whose social and economic institutions are decidedly oriented toward individuals without physical, emotional, and/or mental impairment.

Mainstreaming is the cornerstone on which Project Head Start has based its services to preschool handicapped children. Although the passage of the Education for All Handicapped Act (Public Law 94-142) should result in a more widespread implementation of mainstreaming

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[1/] See, for example, Colker, L., State of the Art Literature Review on the Mainstreaming of Handicapped Children and Youth, report prepared pursuant to Contract DHEW 105-76-1113, Applied Management Sciences, Inc., 1976; Kaufmann, M., et al, Mainstreaming: Toward an Explanation of the Construct, Washington: Intramural Research Program, BEH, 1975; Warfield, G. (ed.) Mainstream Currents, Reston: Council for Exceptional Children, 1974; Birch, J., Mainstreaming: Educable Retarded Children in Regular Classes, Reston: Council for Exceptional Children, 1974; Beery, K. (ed.) Models for Mainstreaming, San Rafael: Dimensions Publishing Co., 1972.

practices, few programs, public or private, have currently attempted to implement a mainstreaming strategy to the extent to which Head Start has.[1]

## The Evaluation of the Head Start Handicapped Effort

The Head Start, Economic Opportunity, and Community Partnership Act of 1974 requires the Secretary of the Department of Health, Education, and Welfare to provide for

> "the continuing evaluation of programs under [Head Start], including evaluations that measure and evaluate the impact of programs [operated by Head Start] in order to determine their effectiveness in achieving stated goals, their impact on related programs and their structure and mechanisms for delivery of services, including, where appropriate, comparisons with appropriate control groups composed of persons who have not participated in such programs."[2]

Pursuant to this requirement, the Administration for Children, Youth and Families awarded a contract to Applied Management Sciences to conduct a two-year study of the Head Start handicapped effort beginning in the summer of 1976.

During the first year of this effort, case studies were conducted on 269 handicapped children. These children were chosen from a nationally representative sample of 59 Head Start programs. Issues which were investigated included the way in which these children came to be enrolled in Head Start (outreach and recruitment activities), the procedures by which they were confirmed as handicapped (screening and diagnosis), the ways in which their individual plans of services were developed (including an in-depth review of each child's diagnostic file) and what services were actually afforded these children and their families. Field staff interviewed Head Start directors and staff, diagnosticians, and other professional service providers. Data from the Head Start programs were compared to similar program data from a sample of 45 non-Head Start programs also serving the preschool handicapped. The results of this process evaluation are presented in Walters, et al (1978).

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[1] Walters, P., et al, Evaluation of the Process of Mainstreaming Handicapped Children into Project Head Start: Phase I Final Report, prepared pursuant to Contract DHEW 105-76-1113, Applied Management Sciences, Inc., 1978.

[2] Public Law 93-644, Sec. 524(a).

During the second year of this evaluation (September 1977 through November 1978), field staff returned to those Head Start and non-Head Start programs visited during the first year and conducted baseline and posttest developmental assessments on approximately 400 Head Start handicapped children, 350 non-Head Start handicapped children, and 150 handicapped children not enrolled in any program of services in an attempt to assess the relative impact of the Head Start handicapped effort.[1]

The data collected over the course of the entire evaluation effort will be used to formulate recommendations on ways to improve the effectiveness of Project Head Start through funding emphases, technical assistance, staff development and training, and/or changes in performance guidelines. In addition, data from the second year's investigation will hopefully provide a comprehensive data base that will serve to further basic research into issues pertaining to mainstreaming and other programmatic services to assist the development of preschool handicapped children.

## Basic Study Questions: Phase II

The first year's investigation is regarded as Phase I of the evaluation effort. Phase II of the evaluation involved the second year's activities. Throughout the balance of this report, the Phase I/Phase II labels will be used to distinguish the respective study components described above.

The Phase II study was designed to provide answers to several general questions:

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[1] In addition to the impact evaluation, the second year's effort also included an investigation of program efforts to ensure post-Head Start program service continuity for the sample of children who participated in the first year's activities. The results of this substudy are presented in Thouvenelle and Vogel (1978).

- How does the progress of handicapped children enrolled in Head Start compare with the progress of handicapped children receiving no special services?
- How does the progress of handicapped children enrolled in Head Start compare with the progress of handicapped children enrolled in other programs of services, other factors being equal?
- Within Head Start programs, what variables explain differential progress among handicapped children?
- Do variables that account for developmental progress among children enrolled in Head Start differ from those that account for progress among children enrolled in non-Head Start programs?
- To what extent does a handicapped child's enrollment in Head Start affect his/her parents' attitudes toward and involvement in the child's program of services?

The study design adopted to answer these questions is fully discussed in Chapter 2. However, these questions provide the basic framework for the analyses presented in later chapters and it is around these questions that this report has been organized.

Report Organization

The balance of this report is divided into nine chapters. These chapters are, in turn, grouped into four distinct analytical areas. The first analytical area involves study design issues, measurement issues, and sampling procedures. The relevant chapters include Chapter 2, "Study Design and Sampling Procedures" and Chapter 3 "Special Analytical Considerations." This latter chapter is particularly important because it presents the results of two reliability substudies conducted to ascertain the degree of confidence that may be invested in data from key dependent variables. It also discusses the issue of handicap severity as an important explanatory variable and how severity was measured for the purposes of this evaluation.

The second analytical area describes the study outcome variables, child/family background characteristics, program/staff characteristics, and data from the Prescott-SRI Child Observation System. The relevant chapters in this section are Chapter 4, "Study Findings: Child Specific Variables," which details the ways in which the various study groups differed along important dimensions; Chapter 5, "Family Background Variables," which examines yet another aspect of study group differences; Chapter 6, "Program and Staff Characteristics," which describes the classroom structures, and staff background, preparation, and attitudinal orientation with respect to the provision of services to handicapped children; and Chapter 7, "The Prescott-SRI Child Observation System." This last chapter is particularly important because it discusses the behavioral variables identified through formal classroom observations that were used in the analysis of program impacts and presents an assessment of the reliability of these observations.

The third analytical area considers between and within-group analysis of study outcome variables. Chapters developed in this area include Chapter 8, "Between-Group Analysis," which seeks to determine whether differential program effects exist; and Chapter 9, "Within-Group Analysis," which seeks to determine what it is about a program that results in successful program outcomes for its enrollees.

Finally, Chapter 10 briefly summarizes study results and conclusions.

All chapters are supported by an extensive set of appendices following Chapter 10.

# 2

# STUDY DESIGN AND SAMPLING PROCEDURES

## Conceptual Overview

Before attempting a summative evaluation of any program, it is necessary to have clearly in mind the intended outcomes of the program and those variables, programmatic as well as non-programmatic, that may be expected to influence these outcomes. As straightforward an axiom as this might appear to be, many evaluations are less successful than they might otherwise have been precisely because not enough attention is given to this critical conceptual step in evaluation design. While it would be pretentious to claim that the present evaluation of the Head Start handicapped effort is a model for all other large-scale evaluations of services to handicapped children, considerable time was expended reviewing previous research in an attempt to arrive at an evaluation framework that adequately addressed the key study questions presented in Chapter 1.

The results of this literature and research review indicated four very broad guidelines for conducting a national evaluation of the Head Start handicapped effort. First, such an evaluation should follow a rather traditional educational research model by taking into consideration the effect of family, community, and individual child characteristics when assessing program impact on children (Raizen, et al, 1974). However, unlike most educational evaluations, much more attention should be focused upon the significance of individual child characteristics as they relate to program outcomes (Raizen, et al, 1974; Colker, 1976). Specifically, the classification of "handicapped" is incredibly broad. Under this generic term are children with mild speech delays as well as children who are severely impaired physically, emotionally, and mentally. Evaluation of program effects must at least be handicap specific.

Second, progress with handicapped children, particularly those with more pronounced disabilities, is in large part a function of consistency and repetition of intervention and remediation strategies. Programs designed to meet the special needs of handicapped children must go beyond the confines of the classroom and must be supported and reinforced in the home. As stated by Cansler and Martin, "In order to provide the best climate and training for the handicapped child, it is imperative that parents' involvement be sought, cultivated, and acknowledged as extremely valuable."[1] Consequently, a proposed evaluation of the Head Start handicapped effort must focus upon characteristics of a child's family that go beyond simple demographic considerations and socio-economic status. The evaluation must also focus upon parental participation in and attitudes toward their child's program of services.

Third, the effectiveness of programs for the handicapped also depends on the degree to which staff and a program's administration are committed to a child's development (Barngrover, 1971; Connor, 1976; Shotel, et al, 1972; Jordan and Proctor, 1969; Panda and Bartel, 1972). This commitment goes beyond specific teaching strategies and classroom structures. As stated by Valletutti:

> "Segregation or integration is not the critical issue. The values and attitudes of teachers and their effects on the pupil's self-perception and performance are the key questions. The acceptance/rejection order of students by teachers is specific to a particular class and will change when class composition is altered. Ideally, before placing a special child into any class, the attitudes and values of the teacher should be carefully and precisely delineated."[2]

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[1] D. P. Cansler and G. H. Martin (eds) Working with Families: A Manual for Development Centers, Washington: BEH 1973, p. 19.

[2] P. Vallettuti, "Integration vs. Segregation," The Journal of Special Education (3, 1969), p. 405.

Again, an evaluation of the Head Start handicapped effort must focus upon characteristics of the program that go beyond institutional models and strategies, staffing patterns, and staff demographics. As with parental considerations, the evaluation must also focus upon staff and administrator attitudes toward children, particularly when these children are served in a mainstream context.

The three preceding evaluation guidelines address the nature of the independent variables that must be reflected in the evaluation. The fourth evaluation guideline that emerged from existing research pertains to the nature of the outcome measures to be considered. Too often summative evaluations of preschool handicapped programs have narrowly focused on cognitive growth as the outcome of interest (Walker, 1973). Not only does this emphasis ignore outcomes that may be more significant over the long run (self-esteem, socio-emotional development, communication skills), it is also an outcome measure that is relatively meaningless with respect to program effects _vis-a-vis_ certain handicaps such as speech impairment and physical disability.[1] Therefore, evaluation outcome measures should be multidimensional and be applicable to all handicaps served in Head Start programs.

Further, critics of previous handicapped program evaluations have pointed out that perhaps the best method for assessing the progress of handicapped children is through direct observation of the child's behaviors in the service delivery context (Werry and Quay, 1969; Hall _et al_, 1968; Lovitt, 1970). As stated by Baldwin and Baldwin:

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[1] ACYF has long recognized this shortcoming of cognitive growth as an evaluation criterion. Currently, ACYF is involved in efforts to develop measures of "social competency." Defined as the child's ability to successfully cope with everyday life situations, social competency, in the generic sense, is clearly a much more appropriate evaluation criterion than cognitive development for Head Start preschool programs.

> "The most neglected field of study [of handicapped children] and one of the most promising ones is the actual observation of handicapped children of all kinds in their families, in school, and in other naturalistic situations. While the problems of doing such research are formidable, they are not insurmountable."1/

Gains made by handicapped children are often subtle and are more likely to be manifested in behavioral contexts than through formal assessments and standardized tests. Therefore, the evaluation of the Head Start handicapped effort should include a behavioral observation system as at least one of a set of outcome measures. This is particularly so in any effort to address the consequences of mainstreaming handicapped children with their non-handicapped peers.

Given the four broad evaluation guidelines discussed above, a general evaluation orientation was established that can be summarized as follows. Head Start program treatment effects were measured along a number of different dimensions. Cognitive outcomes were given less prominence than those that related to a child's socio-emotional development. Three sets of variables--individual child characteristics, family characteristics, and community characteristics--were expected to independently affect the outcomes of interest. Of these variable sets, child characteristics were given prominence over those in the other two variable sets. Treatment effects would, in part, be mediated by staff commitment to serving the handicapped and treatment (program) effects would be also indirectly manifested through efforts to encourage parent support of, and participation in, program efforts. Finally, children served in a mainstream setting would exhibit treatment effects at least comparable to those in a non-mainstreamed setting.

## Evaluation Design

Ideally, an evaluation of the Head Start handicapped effort should involve random assignment of children to "treatment" and

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1/ C. P. Baldwin and A. L. Baldwin, "Personal and Social Development of Handicapped Children," in C. E. Sherrick et al, Psychology and the Handicapped Child (Washington: GPO, 1974) p. 183.

"no treatment" study groups. Further, because variability in expected handicapped child development was expected to be, in large part, a function of individual child characteristics, the random assignment should occur between children matched at least by handicapping condition. Finally, in order to effectively identify features of the "treatment" that seem to affect differential study group outcomes, some standardization of "treatment" variables would be desirable.

As is often the case in most program evaluations, however, the ideal evaluation design was almost impossible to implement for practical, ethical, and resource considerations. First, random assignment to study groups posed critical ethical questions. Second, matching by handicap was constrained by the relatively low incidence of handicapping conditions in many American communities. Third, Head Start programs emphasize local control of program structure and content. Consequently, standardization of the "treatment" for purposes of this evaluation was impossible.1/ Finally, the costs of implementing such a design were prohibitive.

The design that was adopted may be considered a quasi-experimental baseline/posttest design with non-equivalent control groups. Two "treatment" groups were established--handicapped children served in Head Start programs and handicapped preschool children served in non-Head Start programs. In addition, a third "no treatment" group was established that included preschool handicapped children who were not enrolled in a program of services. Assignment to each of the study groups was based on pre-existing program affiliation (or lack thereof). Details of the sampling procedures for each of these three study groups are presented in a later section of this chapter.

Much has been written about the pitfalls of analyses involving non-equivalent groups. Lord (1967), for example, goes so far as to say that "...there simply is no logical or statistical procedure that

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1/ Standardization of treatment is also generally at odds with the individualization of programs of services for the handicapped--a practice promoted by Head Start and required by Public Law 94-142.

can be counted on to make proper allowances for uncontrolled preexisting differences between groups." Other writers such as Porter and Chibucas (1974, 1975), Kenny (1975), Linn and Werts (1977), Tallmadge and Horst (1976), and Magidson (1977) approach the issue from a more positive standpoint, each suggesting various analytical strategies that should be considered in the non-equivalent group situation. Irrespective of the merits of the positions taken by these writers, though, the critical issue in study designs using non-equivalent groups is the specification of the relevant dimensions which differentiate the study groups in question. Unless the analyst is confident that all such differences are accounted for and that each can be measured with a reasonable degree of validity, non-equivalent group comparisons, no matter which adjustment strategy is utilized, will generate problematic conclusions at best. A great deal of effort was expended in order to identify and validly measure those variables that may serve to differentially affect developmental outcomes in the three study groups under consideration. While the present evaluation still must accept the use of fallible covariates to adjust for pre-existing differences (see Study Limitations, p. 2.23), the authors believe that the results of the study are informative and the study design employed permits the formulation of at least tentative answers to the basic study questions identified in Chapter 1. Discussion of group differences among the three study groups are discussed in detail in the Interim Technical Report by Rader, et al (1978) and in following chapters of this report.

## Study Variables and Instrumentation

Selection of study variables for this evaluation was based on a review of previous educational program evaluations, previous research involving handicapped children, and on recommendations for national Head Start evaluations formulated by Raizen, et al (1974). In addition, several variables were selected after discussions with program staff at ACYF. Emphasis was placed on those variables that were related to the general model of handicapped child development implied in the discussion of the evaluation's conceptual framework and in those variables that were a priori believed to be most likely to differentiate children in the three basic study groups.

Five groups of variables were established. Measures on most variables were collected twice during the 1977-78 program year--once between October 17 and November 15, 1977 and again between April 21 and May 26, 1978. Specific variables within each of the five variable groups, the way in which they were measured, and the instruments used to collect data pertaining to these variables are presented below.

| Variable | Nature of Measurement | Data Source |
|---|---|---|
| *OUTCOME VARIABLES* | | |
| physical (motoric development)<br>self-help skills<br>social/emotional development<br>academic development<br>communication skills | norm-referenced developmental age (in months) | Alpern-Boll Developmental Profile |
| classroom social behaviors | age/sex/SES adjusted percentile rank | California Preschool Social Competency Scale |
| home environment activities | ordinal scale | High/Scope Home Environment Inventory |
| classroom behavior and social integration | composite variables, z-scores | Prescott-SRI Child Observation System |
| *INDIVIDUAL/FAMILY VARIABLES-STATIC*[1] | | |
| chronological age of child<br>primary handicap<br>secondary handicap(s) | expressed in months<br>nominal categories<br>nominal categories | Case Background Addendum |
| severity of handicap | ordinal scale, 1-4, mild to profound | Case Background Addendum |

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[1] This second variable set is made up of individual child and family variables that, in the short run, may be considered static or unaffected by program participation.

| Variable | Nature of Measurement | Data Source |
|---|---|---|
| number of previous years in preschool program | ordinal scale, years | Applied Management Sciences' Parent Interview Schedule |
| mother's occupation | Duncan Occupational Index | |
| father's occupation | Duncan Occupational Index | |
| mother's education | ordinal scale, 1-5, no high school degree to post-graduate degree | |
| father's education | ordinal scale, 1-5, no high school degree to post-graduate degree | |
| family income | ordinal scale in $1000 intervals to $10,000 | |
| family structure | number of siblings<br>number of handicapped siblings<br>birth order | |
| sex | male, female | Case Background Data Profile |
| ethnicity | nominal categories | Addendum to Prescott-SRI Child Observation System |
| *INDIVIDUAL/FAMILY VARIABLES-DYNAMIC*[1] | | |
| parent activity in program functions | ordinal Likert-type scale | Case Background Data Profile |
| services received by the child outside the program context | nominal categories; yes/no response | Applied Management Sciences' Parent Inventory |
| parental attitudes about mainstreaming | ordinal Likert-type scale | Applied Management Sciences' Parent Inventory |
| parental attitudes about children and parenting | ordinal Likert-type scale | Schaefer Parent Inventory |
| parental attitudes about "education" | ordinal Likert-type scale | Schaefer Parent Inventory |
| parental attitudes about program benefits | ordinal Likert-type scale | Applied Management Sciences' Parent Inventory |

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[1] This third variable set consists of those measures that were expected to possibly change over the course of the evaluation.

| Variable | Nature of Measurement | Data Source |
|---|---|---|
| *TREATMENT (PROGRAM/STAFF) VARIABLES-STATIC* [1] | | |
| years of service to handicapped preschoolers | interval, in years | Primary Data Schedule |
| total pupil/staff ratio | ratio measure | |
| degree of service coordination with other agencies | ordinal scale, 1-3, little - extensive | |
| total per pupil expenditures | ratio measure | |
| handicapped funds/handicapped student ratio | ratio measure | |
| handicapped funds/total funding ratio | ratio measure | |
| type of mainstreaming | nominal classification | Case Background Data Profile |
| percentage of available program day spent in mainstreamed context | ratio measure | |
| type of instructional curricula utilized | nominal classification | |
| class size | interval, students | Applied Management Sciences' Teacher Interview Schedule |
| ratio of handicapped to non-handicapped children | ratio measure | |
| ratio of paid adult staff to class size | ratio measure | |
| ratio of all adults (including volunteers) to class size | ratio measure | |
| previous staff experience with handicapped children | interval, years | |
| level of education | ordinal, 1-5, less than high school to post-graduate degree | |
| degree area | nominal classification | |
| salary | ordinal scale, 1-5, $5,000 or less to over $12,000 | |

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[1] In the same sense that certain individual child/family characteristics were considered to be static, so too, were a set of program/staff variables.

| Variable | Nature of Measurement | Data Source |
|---|---|---|
| *TREATMENT (PROGRAM/STAFF) VARIABLES-DYNAMIC*[1] | | |
| general feelings about the relationship of parents to child development | ordinal Likert-type scales | Schaefer Teacher Inventory |
| general educational beliefs/values | ordinal Likert-type scales | Schaefer Teacher Inventory |
| attitudes about handicapped children and the practice of mainstreaming | ordinal Likert-type scales | Applied Management Sciences' Teacher Inventory |
| general perceptions of program support/environment | ordinal Likert-type scales | Schaefer Teacher Perception of Organizational Environment Inventory |

This list of study variables is intended to be an overview only. The actual data files used for analytical purposes contained over 560 individual variables. The reader interested in a more exhaustive delineation of variables examined during the course of this evaluation is referred to Appendix L, Study Instrumentation.

Similarly, a thorough discussion of each of the study instruments referred to in the above description of study variables is also found in Appendix K. To summarize, however, data collection for the present evaluation required the use of 11 instruments and interview schedules:

- The Alpern-Boll Developmental Profile
- The California Preschool Social Competency Scale
- The Prescott-SRI Child Observation System
- The High/Scope Home Environment Inventory
- The Schaefer Parent Inventory (selected subscales)
- The Schaefer Teacher Inventory (selected subscales)
- The Schaefer Teacher Perception of the Organizational Environment

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[1] Again, this final set of variables was considered to be subject to change over the course of the evaluation and was therefore considered to be dynamic in the same sense as previously enumerated individual child/family characteristic variables.

- The Case Background Data Profile (Applied Management Sciences)
- The Primary Data Schedule (program data; developed in part by Applied Management Sciences and in part adopted from the questionnaire used in the fifth Annual Survey of the Head Start Handicapped Effort)
- The Applied Management Sciences' Teacher Inventory
- The Learning Accomplishment Profile (diagnostic version-selected subsamples)

An overview of these instruments, their purpose, their method of administration, their audiences, and other pertinent data is highlighted in Exhibit 2.1.

## Study Sample

The sample for the evaluation of the Head Start handicapped effort was selected in two steps. The first step involved the selection of programs to participate in the proposed evaluation; the second step involved selection of actual study participants. Each step is discussed in turn.

### *PROGRAM SAMPLE*

A total of 59 Head Start programs were selected for inclusion in Phase I of this study and were asked to participate in Phase II as well. Randomly selected, these programs are representative of the universe of all Head Start programs with respect to urban/rural location[1/] and enrollment size. Four of the original 59 Head Start programs were dropped from the data collection effort. Three were excluded because their start and end dates for the program year did not coincide with scheduled field activities. A fourth program requested to be dropped because the program was undergoing a major self-evaluation and assessment procedure and was unable to complete any diagnostic activities at the time of the pretest data collection effort (October 17-November 15, 1977). Exhibit 2.2

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[1/] Urban/rural classification was based upon whether programs were located in Standard Metropolitan Statistical Areas.

## EXHIBIT 2.1: STUDY INSTRUMENTATION

| Instrument | Purpose | Source | Method | Baseline | Posttest |
|---|---|---|---|---|---|
| Primary Data Interview Schedule[1] | Describe enrollment, program structure, curriculum, and funding | Program Director | Mailed Questionnaire or personal interview | X | - |
| Case Background Data Profile[1] | Describe child's handicap, birth date, classroom structure, curriculum, and enrollment information | Program Director Handicap Coordinator, Teacher | Personal interviews | X | - |
| Case Background Data Profile (Non-Served)[1] | Describe child's handicap, birth date, sex, and age | Parent | Personal interviews | - | X |
| California Preschool Social Competency Scale | Measure child's classroom social behaviors, responsibility, and independence | Teacher | Personal interviews or Self Administered | X | X |
| Teacher Interview Scale[1] | Describe teacher's background characteristics and attitudes about teaching handicapped children | Teacher | Personal interview or Self-Administered | X | X<br>(Attitude items only) |
| Schaefer Teacher Inventory I | Describe teacher's attitudes about parent involvement in the program and classroom and teachers' educational attitudes | Teacher | Personal interview or Self-Administered | X | X |
| Schaefer Teacher Perception of the Environment Inventory | Describe teacher's attitudes about program policies, administration, support from colleagues and ranking of the importance of different job factors | Teacher | Personal interview or Self-Administered | X | X |
| Alpern-Boll Developmental Profile | Assess child's skill development in these areas: physical, self-help, social, academic, and communication | Parent (or other person very familiar with child) | Personal interview | X | X |
| High Scope Home Environment Scale | Describe child's home environment | Parent | Personal interview | X | X |
| Parent Interview Schedule | Describe parents' background, family structure, and parental attitudes about their child and expectations about the child's program and mainstreaming | Parent | Personal interview | X | X<br>(Selected items only) |
| Schaefer Parent Inventory[1] | Describe parent attitudes about child's program and policies, and parent educational beliefs | Parent | Personal interview | X | X |
| Learning Accomplishment Profile-Diagnostic Edition (LAP-D) | Assess child's skill development in these areas: gross motor, fine motor, self-help, cognitive, and cognitive/language | Child (Speech impaired and emotionally disturbed only) | Individual assessment | X | X |
| Prescott-SRI Child Observation System | Describe specific child behavior and interaction incidents and summarize general behavior pattern of child in classroom | Child | Observations in classroom | X | X |

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[1] Instrument developed by Applied Management Sciences for this project.

presents a map of the United States indicating the location of the Head Start programs participating in the Phase II study.

The non-Head Start programs participating in the Phase II effort were selected from the same communities in which the sample of Head Start programs were located. Their participation was totally voluntary although a small gift of program materials was provided as a token of ACYF's appreciation for their cooperation. Because participation of non-Head Start preschool programs was voluntary, though, no control could be exercised to assure that in terms of program structure and organization these programs were comparable to Head Start programs. One hundred sixty non-Head Start programs were contacted and asked to participate; 54 responded and agreed to participate.[1/] Of these, four were dropped because the ages of the children they served exceeded sample requirements[2/] and another was excluded because it was a completely residential facility and contact with parents proved unfeasible.

Exhibit 2.3 presents a map of the United States indicating the location of the non-Head Start programs participating in the Phase II study. Exhibit 2.4 indicates the type of non-Head Start programs in the sample.

It is immediately apparent from an examination of the types of non-Head Start programs that participated in the Phase II study that they are markedly diverse, often categorical, and established specifically to meet the needs of handicapped children. Not only are these programs unlike Head Start programs, there is a legitimate question as to whether there is any underlying unity among these

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[1/] Although a specific tabulation of reasons for the relatively high non-participation rate for non-Head Start programs was not maintained, the general concerns expressed to project staff by these programs were: 1) the amount of staff time that would be required; 2) program inability to accommodate field staff in early October; and/or 3) concerns over child confidentiality.

[2/] For purposes of this study a preschool-aged child was defined as a child between the age of two years, six months and six years, six months at the time of pretesting.

EXHIBIT 2.2: Location of Head Start Programs Participating in the Study

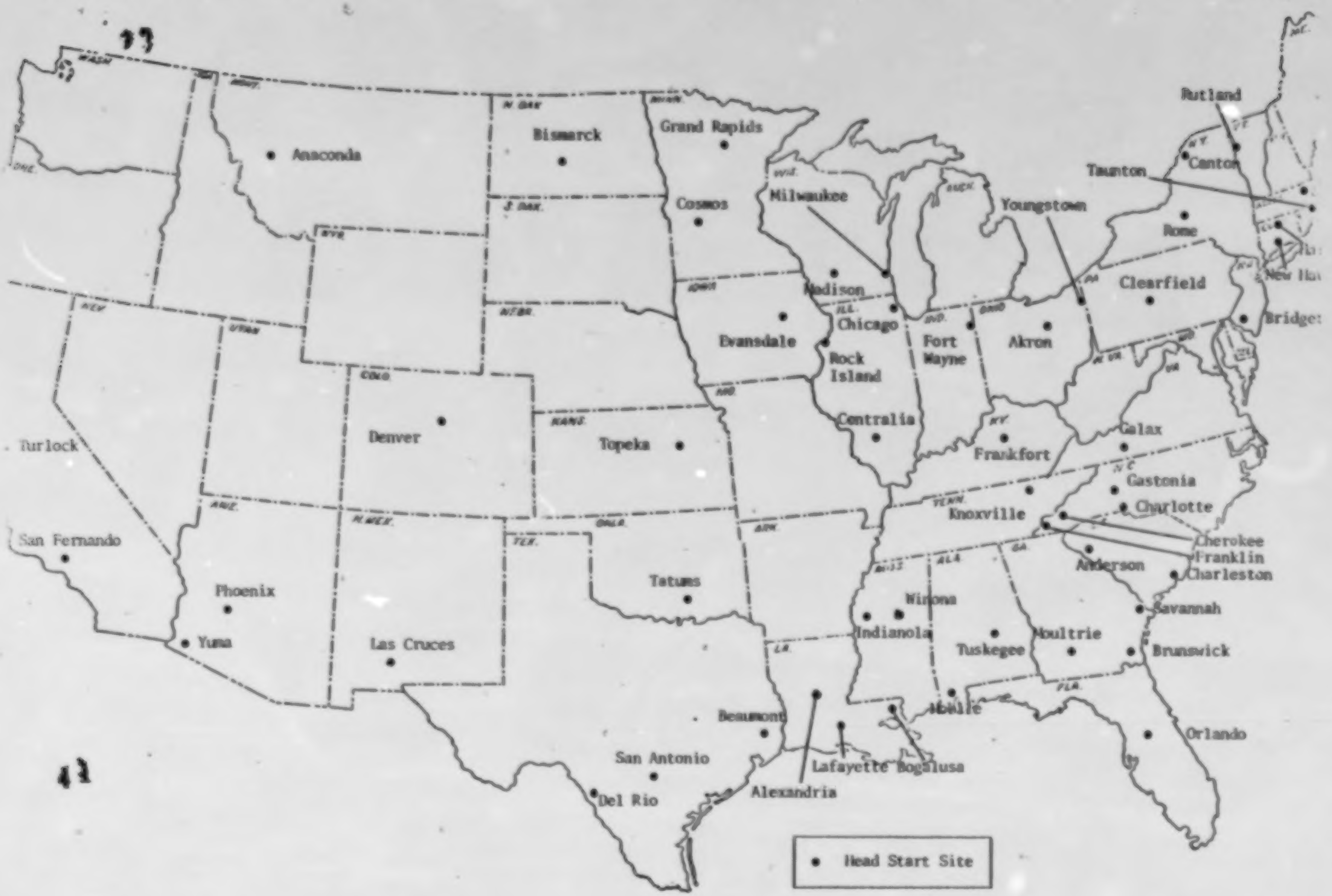
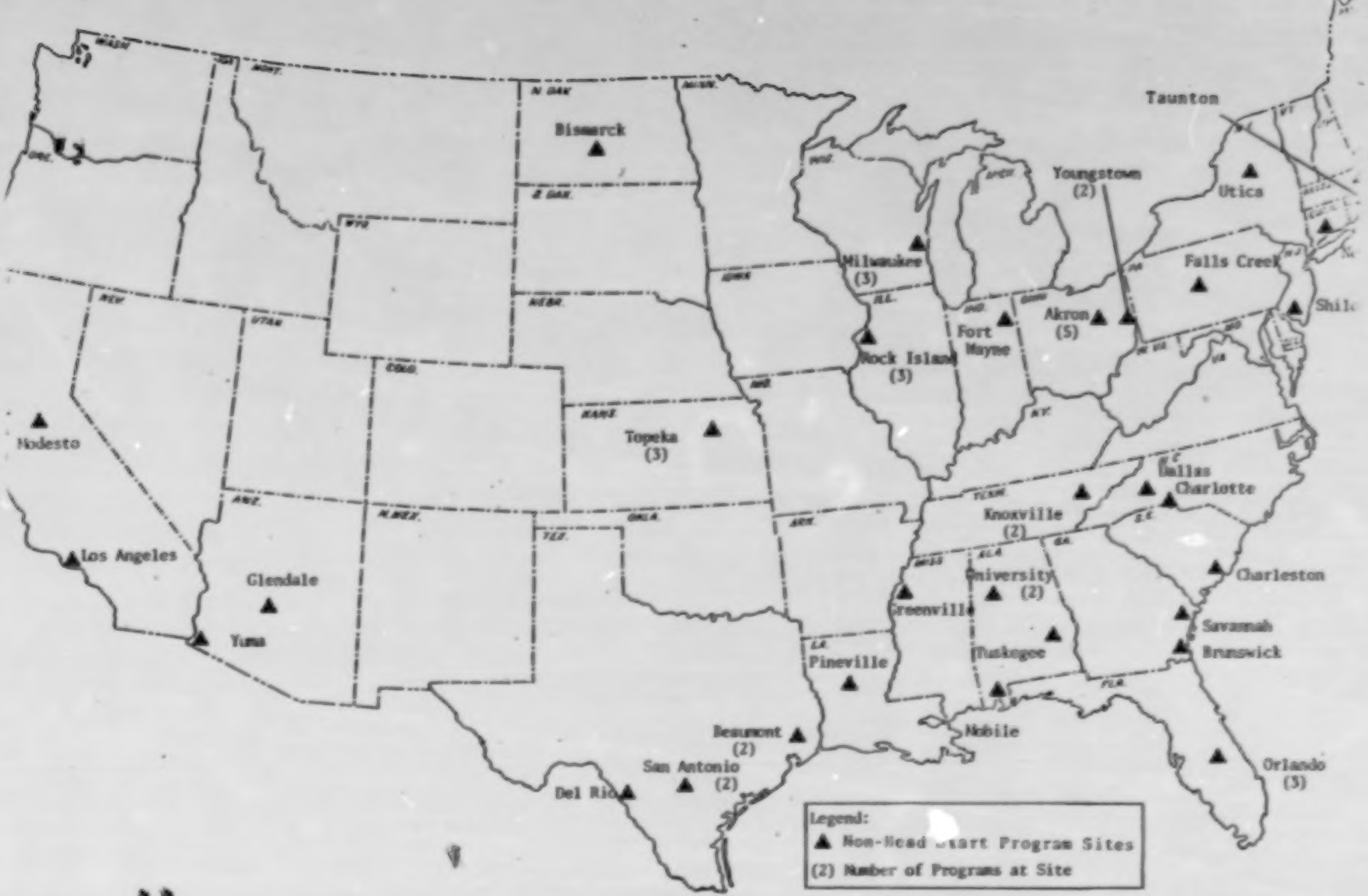

WASH.
MONT.
N. DAK.
MINN.
ORE.
S. DAK.
WYO.
WIS.
MICH.
N.Y.
VT.
IDAHO
NEV.
UTAH
COLO.
NEBR.
IOWA
ILL.
IND.
OHIO
PA.
MD.
W. VA.
VA.
KANS.
MO.
KY.
N.C.
TENN.
ARIZ.
N. MEX.
OKLA.
ARK.
TEX.
MISS.
ALA.
GA.
S.C.
LA.
FLA.
N.J.
Anaconda
Bismarck
Grand Rapids
Cosmos
Milwaukee
Madison
Chicago
Evansdale
Rock Island
Centralia
Fort Wayne
Akron
Youngstown
Clearfield
Rutland
Canton
Taunton
Rome
New Ha
Ha
Bridge:
Turlock
San Fernando
Denver
Topeka
Phoenix
Yuma
Las Cruces
Tatums
Frankfort
Galax
Gastonia
Charlotte
Knoxville
Cherokee
Franklin
Anderson
Charleston
Savannah
Winona
Indianola
Tuskegee
Moultrie
Brunswick
Mobile
Orlando
Beaumont
San Antonio
Del Rio
Alexandria
Lafayette
Bogalusa
● Head Start Site

EXHIBIT 2.3: Location of non-Head Start Programs Participating in the Study


Bismarck
Taunton
Youngstown (2)
Utica
Milwaukee (3)
Falls Creek
Fort Wayne
Akron (5)
Shil
Rock Island (3)
Topeka (3)
Modesto
Dallas
Charlotte
Knoxville (2)
Los Angeles
Glendale
University (2)
Greenville
Charleston
Savannah
Brunswick
Yuma
Tuskegee
Pineville
Mobile
Beaumont (2)
San Antonio (2)
Del Rio
Orlando (3)
Legend:
▲ Non-Head Start Program Sites
(2) Number of Programs at Site

## EXHIBIT 2.4: TYPES OF NON-HEAD START PROGRAMS PARTICIPATING IN THE PHASE II STUDY

| | |
|---|---|
| Public School Preschool Special Education Programs (non-categorical)[1] | 7 |
| Publically Funded Special Education Programs not under Local Education Agency Sponsorship (generally categorical programs for the mentally retarded) | 8 |
| Privately Funded Special Education Programs (non-categorical) | 6 |
| Private Preschool Programs for Retarded Children | 10 |
| Easter Seals/Crippled Children's Association Programs | 5 |
| Private Preschools for Speech Impaired Children | 2 |
| Private Research Foundations (categorical) | 2 |
| University Affiliated Programs (generally categorical) | 6 |
| United Cerebral Palsy Association Programs | 3 |
| TOTAL | 49 |

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[1] A program is categorical if it is designed to serve children with a specific handicap; it is non-categorical if it affords services to handicapped children with diverse disabilities.

programs other than the fact they are not Head Start programs. This, of course, has implications for whether non-Head Start programs constitute a "treatment" that can be contrasted to Head Start's efforts to serve the handicapped. This point should be kept in mind when reviewing results of between-groups analyses presented in later chapters. All that can be said is that non-Head Start programs were selected from the same communities in which Head Start programs were located and represented reasonable placement alternatives for at least some of the handicapped children that were served in a Head Start context.

## *CHILD SAMPLE: HEAD START AND NON-HEAD START PROGRAMS*

The primary concern in the selection of handicapped children to participate in the Phase II study was to ensure that reasonable numbers of children representing the 10 basic handicapping conditions served by ACYF were obtained. To do this, each program agreeing to participate in the study was asked to provide a roster of handicapped enrollees for whom parental permission had been secured for study participation. Individual children listed on these rosters were coded so that project staff had no knowledge of any identifying information other than the child's primary handicapping condition. Upon receipt of these rosters, project staff selected children by code on the basis of handicapping condition and returned to the programs the codes of these particular children. Program staffs were given the responsibility for arranging parent interviews at the time of scheduled site visits.

At the time of the pretest, 815 children were selected for inclusion in the Phase II study through the procedures described above. Of this number, 782 provided complete pretest information--429 Head Start children, and 353 non-Head Start children. Thirty-one cases were dropped from the pretest data file because they were either missing critical pretest measures or it was determined that the children exceeded the age limits established for the study (6 years, 6 months at pretesting). In addition, two cases were dropped because parents indicated an unwillingness to participate in any further data collection efforts.

For posttest data collection efforts, program staffs again arranged all necessary parent interviews and classroom observations. Field staff were able to recontact 712 of the 782 pretest cases (91%).

### *CHILD SAMPLE: NON-SERVED CONTROL GROUPS*

Non-served handicapped children were defined as handicapped children who were not enrolled in a program in which at least two or more services (defined in terms of Head Start program components, i.e., education services, social services, health and nutrition services, and parent/family involvement/counseling services) were provided. The non-served sample, therefore, includes several children who were receiving some form of limited service. Thirty-five percent of the pretest sample received occasional services such as daycare, speech therapy, social worker home visits, and home teacher visits. However, relative to the services provided to children enrolled in Head Start and non-Head Start programs, the children in this study could only be considered seriously underserved at best.

Children included in the non-served study group were selected from a professionally diagnosed population of preschool children not currently receiving treatment for their handicaps. Most of the children selected were chosen from the same communities in which the selected Head Start programs were located. Additionally, to avoid possible legal difficulties, the selected study group resided primarily in States which had not mandated the provision of services to all preschool handicapped children.

Potential study participants were identified through a number of sources. The directors of each Head Start and non-Head Start program were asked to provide names, addresses, and telephone numbers of handicapped children who were awaiting enrollment in their programs. Other resources contacted for the same purpose included local school systems, local Public Health Departments, State and local directors of Easter Seal Agencies, and the Associations for Retarded Children.

Approximately 154 sample participants were identified through these resources. In each case the referring agency/person was requested to make the initial contact with the respondent to solicit and encourage their participation in the study. This intermediate step was taken to protect the agency's confidentiality of data and the privacy of the parents.

After this initial communication was made, field staff contacted the parents to: (1) further explain the purpose of the study; (2) secure permission for their handicapped child to be included in the study; and (3) confirm an interview date.

Children in the non-served control group and their parents were assessed with the same measures used for Head Start children and parents, except for those that were inappropriate because they related to classroom events or to services the children did not receive. Field staff were able to recontact and collect data from 121 of 154 pretest non-served children at the time of posttest data collection activities (78.6%).

The characteristics of the Head Start, non-Head Start, and non-served study samples are presented in Chapter 4.

## Data Collection Procedures and Schedule

Data collection was conducted by teams of two to nine professionals who spent five to seven days at each of the communities represented by the sample programs. A detailed discussion of field staff selection and training can be found in Appendix J, Data Collection Procedures.

The schedule of data collection activities is given in Exhibit 2.5. A six-month interval was established between pretest and posttest site visits. Because of conflicts in schedules, an exact six-month interval was not maintained for several programs, but deviations from this interval were no more than ± 2 weeks for all programs except two. In one program, the deviation interval between the pretest and posttest was -3 weeks; in the other, +4 weeks.

EXHIBIT 2.5: SCHEDULE OF PHASE II DATA COLLECTION ACTIVITIES

| | Program Type | | |
|---|---|---|---|
| Dates | Head Start | Non-Head Start | Non-Served |
| Pretest | | | |
| Begin | October 17, 1977 | October 17, 1977 | November 7, 1977 |
| End | November 25, 1977 | November 25, 1977 | December 30, 1977 |
| Posttest | | | |
| Begin | April 17, 1978 | April 17, 1978 | April 21, 1978 |
| End | May 26, 1978 | May 26, 1978 | June 16, 1978 |

## Unit of Analysis

In recent years there has been an increasing degree of attention to the appropriate unit of analysis in conducting program evaluations. In many studies of program effects, the unit of analysis has been the child (or program participant) and the treatment has been defined as whatever happens to the child during his/her participation in the program that was evaluated. In effect, each child is considered an independent observation. But as Darlington (1978) has correctly pointed out, each case is not independent. If several children have the same teacher, variance in outcomes may be constrained by teachers. Further, teachers may be constrained by specific policies, practices, and training received at the particular program in which they operate. In effect, the appropriate unit of analysis may not be the program participant, but a higher level of aggregation such as the classroom, school, or even the community. Darlington even claims that statistical power is not sacrificed by the resulting shrinkage in sample size that such aggregation would entail. To quote:

> "At first it might seem that we must lose an extraordinary amount of statistical power when we reduce our N from about 2,000 to 44 or less. However, my own theoretical analysis suggests that it doesn't work this way, and I have confirmed this in discussions with mathematical statisticians. A program mean is a mean across perhaps 50 children, so it is a much more stable observation than an observation on a single

> child. A study on 44 observations, each of which is very stable because most of the variation caused by single individuals has been averaged out, can be nearly as powerful as one with 2,000 observations. This effect is not just a theoretical one; we have observed a number of times in our data that significance levels computed with the smaller N are about as good as those computed with the much larger N. Yet the smaller N is far more valid a procedure, because it handles the problem of nonindependent observations discussed above."[1]

Darlington's concerns are particularly germane to evaluations of Head Start programs. As Raizen, *et al* (1974) point out, Head Start is mandated to formulate local program options to meet the particular needs of the communities they serve. It would therefore be expected that intersite variance will be quite large. Raizen, *et al* (1974) express the concern that if intersite variation is ignored and relegated to error variance in an investigation of treatment effects, genuine treatment effects may be obscured.

The concerns and cautions of Darlington, Raizen, and other researchers were given careful consideration in the formulation of analysis strategies for this study. For a number of reasons, the decision was made to retain the child as the unit of analysis, at least for the purposes of the analyses presented in this report. Among the strongest reasons for eschewing site-level analysis is the fact that for many of the sites included in this study, the number of children sampled was so small that the greater stability of site means over individual child means is problematic. An average of 6.8 children were selected from each program visited, ranging from a low of 2 children selected from one program to a high of 15 from another. Further, because primary handicap was determined to be a critical variable for blocking analyses and because most programs visited were non-categorical, site-level means would have been diluted to, in many cases, the level of the individual anyway.

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[1] R. B. Darlington, "Methods, Issues, and Some Illustrative Findings in Analyzing the Data of the Consortium on Developmental Continuity." paper presented before the Annual Conference of the American Educational Research Association, Toronto, March 27, 1978, p. 3.

There was also no similar unit of aggregation for non-served children that would have been meaningful.

Among other reasons for maintaining the individual as the unit of analysis is that although intersite variation was expected to be substantial, the nature of handicapped children and the current state-of-the-art for service delivery for these individuals would lead one to anticipate substantial within-site variation as well. For example, the emphasis on individualized instruction for the handicapped resulted in situations in which the same teacher in the same classroom would use substantially different approaches for working with children in his/her class. Furthermore, children within the same class might receive significantly different levels of services based entirely on the nature and severity of their handicaps. In brief, within-site variance was expected to be so large that within treatments, site/treatment interaction was assumed to be insignificant.

Finally, Darlington's concern about using the child as the unit of analysis is that one or two programs may account for any significant effects detected. In the present study, given the large number of programs and the limited number of children selected from each, the likelihood of one or two programs accounting for significant treatment effects was considered small. The concern expressed by Raizen, et al (1974) that treating intersite variance as error variance might obscure legitimate treatment effects is important, but by doing so the test for treatment effects becomes more conservative.

In summary, it should be noted that the unit of analysis decision was not made lightly. There are several programs in the sample that might permit site-level analysis. While recognizing the pitfalls of using children as the level of analysis in this study, it is left to future analyses of the data base to judge the wisdom of choosing to discount these pitfalls for the purpose of this evaluation.

## Study Limitations

The final issue to be reviewed in this chapter is one that has already been touched upon in preceding discussions. This issue concerns the limitations of this study. These limitations, like those of any evaluation, may be grouped into three major areas: the biases of the evaluators, the study methodology, and analysis strategies. Each, as it pertains to the evaluation of the Head Start handicapped effort, is discussed below.

### *EVALUATION BIASES*

Every researcher and program evaluator approaches a study with a set of biases that impact the implementation and interpretation of that study. Although several such biases may be discussed, two should be noted. The first is the authors' conceptualization of what constitutes "outcomes" for programs involving handicapped children. Clearly, the focus in this study is on a child's developmental abilities. Given the short period of time that elapsed between the pretest and posttest, one could reasonably argue that the focus upon developmental gains is unreasonable. Other outcomes, such as improved self-image, improved interaction skills, or a greater emphasis on social competency may be, in the opinions of others, more appropriate targets for evaluation. To a limited extent, outcomes such as these are addressed. However, the emphasis on developmental gains was chosen because of the diversity of short-term objectives encountered among the various programs participating in this study. That is, the differing philosophical and methodological orientations manifested by the participating programs might render one or more outcomes not specifically related to a child's functional development as an unfair criterion for between as well as within-group comparisons. For example, Head Start's emphasis on the enhancement of social competency is not shared by several of the non-Head Start programs visited. Further, it is not clear what other possible outcomes might mean for a preschool handicapped child. Self-esteem, for example, is a concept whose operationalization is perhaps more difficult and fraught with potential measurement error than the outcomes emphasized in this study.

A second and closely related evaluation bias concerns the primary emphasis in this study upon child-specific outcomes. In a program such as Head Start, it is reasonable to suggest that outcomes related to parental attitudes and practices and peer perceptions and practices are equally as important as outcomes involving the individual handicapped child. While a significant amount of attitudinal data was collected, these data have not been emphasized in this study. Data concerning classroom peers is only tangentially addressed through the Prescott-SRI Child Observation System. The lack of attention to outcomes that were not child-specific was deliberate for practical as well as conceptual reasons. Time and resources represent the practical constraints; the difficulty of relating attitudes to behaviors represent the conceptual constraints.

## *METHODOLOGICAL LIMITATIONS*

In addition to biases of the authors, there are also several methodological limitations to the evaluation of the Head Start handicapped effort. Again there are many limitations which could be discussed and several are addressed in other chapters of this report. However, of primary concern are those limitations resulting from the study sample.

The first of these limitations which was alluded to earlier in this chapter is the non-equivalency of the three study samples. Unequivocal answers to the study questions posed in Chapter 1 would have required random assignment of matched subjects to each of the study groups. This was not possible. Consequently, it will also not be possible to definitively say within specified limits of statistical certainty whether Head Start is a better, comparable, or less desirable placement for handicapped children relative to other placement alternatives or whether Head Start has consequences for a child's development beyond that attributable to expected maturation. This does not mean, however, that answers to study questions cannot be tentatively forwarded. Despite the shortcomings of the study design, the authors agree with Kenny:

> "Some might argue that only true experiments bring valid causal inference, and it is always logically possible to contrive alternative explanations to any quasi-experimental design. For instance, for the nonequivalent control group design any set of results can be explained by the plausible rival hypotheses of the interactions of selection with history, selection with maturation, and selection with testing (see Cook & Campbell, 1975, for some of these explanations). But because the internal validity of quasi-experiments is lower than true experiments, it does not argue against using the judgments of quasi-experiments. We would all prefer to have the testimony about an event from a sighted man over a blind man. But when we have only the blind man, we would not dismiss his testimony, especially if he were aware of his biases and had developed faculties of touch and hearing that the sighted man could have developed but has neglected. The difference between the true experiment and the quasi-experiment is of the magnitude of the difference between sight and blindness. We must often grope in the darkness with quasi-experimental designs, but this blindness both forces us to compensate for biases and helps us develop a newfound sensitivity to the structure of data. Finally, it makes us appreciate the clarity of true experimental inference."1/

A second limitation related to the study sample is the relatively few numbers of children representing each of the ten basic handicapping conditions. Because all analyses presented in this report are handicap-specific, the small sample sizes significantly reduce the power of multivariate techniques to detect legitimate treatment effects.

Finally, it is important to note at least two measurement issues that may also be considered study limitations. The first of these is the use of parent reports to establish levels of developmental ability for the sample children. While the reliability and validity of these data were carefully examined (see Chapter 3), there was no way to adequately ensure the objectivity of this information. Direct assessment of children, though, is not

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1/ D. Kenney, "A Quasi Experimental Approach to Assessing Treatment Effects in the Nonequivalent Control Group Design, *Psychological Bulletin* (Vol. 82, No. 3) 1973, p. 359-360.

considered a necessarily better alternative as later data will indicate. The issue of parent objectivity is more a problem of national preschool evaluations in which the evaluators are unfamiliar with the children being assessed. Without this familiarity, unknown biases in study data are likely to be a concern no matter the data collection technique employed.[1]

The second measurement limitation concerns the method of establishing the severity of a child's impairment. Clearly this is a critical variable in any assessment of handicapped children. However, a review of previous research and discussions with researchers and special educators provided no useful solutions. In fact, the issue of severity is almost ignored in the study design of Head Start's handicapped effort proposed by Raizen, et al (1974).

Severity is a difficult variable to measure primarily because its definition is exceedingly ambiguous. The approach adopted for the present evaluation is to define severity in functional terms; that is, in terms of what the child can or can't do relative to a frame of reference that includes handicapped and non-handicapped children in Head Start as well as non-Head Start programs. While it is the authors' judgement that this technique resulted in adequate measures of severity, the fallibility of this measure must not be discounted in the interpretation of study results. The issue of severity and its measurement is more thoroughly discussed in Chapter 3.

### *ANALYTICAL LIMITATIONS*

Because of the frequency with which the non-equivalent control design has been employed in program evaluation and in educational research, there has been a substantial increase in attention given to analytical techniques that purport to overcome limitations such a design imposes upon more conventional analytical techniques. Some of these new developments address problems with fallible covariates; others, with some of the basic assumptions underlying traditional least squares models (e.g., the increased use of maximum likelihood techniques); and others, with the problems of multicollinearity in studies with significant numbers of independent variables (e.g., ridge regression and principal components regression).

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[1] For example, even if direct assessments are employed, there is the problem of young children's natural tendency to be shy and reserved before unfamiliar persons. This could result in a substantial underestimate of developmental abilities.

After reviewing possible analytical alternatives for the present evaluation, a decision was made to utilize traditional least squares regression techniques. This decision was made, in large part, because such techniques are widely understood by the research community and because such techniques should be completely explored prior to subjecting study data to one or more alternative analytical procedures. If results from traditional methods proved contradictory or ambiguous, it was felt that the other techniques should be utilized. Resource constraints also prevented parallel data analyses with two or more alternative techniques.

The reliance on traditional least squares regression means that between-groups analyses were conducted within an ANCOVA framework. As an analytical technique for non-equivalent study group designs, ANCOVA has been the subject of much criticism primarily because, as the earlier quote by Lord emphasizes, there are pre-existing systematic differences between or among treatment and control groups. Campbell and Erlebacher (1971) have pointed out that ANCOVA often underadjusts for those covariates most likely to impact evaluation outcomes, and the group at the greatest disadvantage with respect to these variables can erroneously be shown to incur losses as a result of participation in compensatory education programs relative to a control group. The arguments against ANCOVA are not disputed in this report. The interesting twist, though, to the "underadjustment" argument is that in the present evaluation it is difficult to decide which of the study groups is at a disadvantage with respect to important covariates. Given those variables that affect the development of handicapped children, one cannot automatically assume Head Start enrollees are the disadvantaged group. As will be shown in later chapters, the Head Start sample is economically disadvantaged relative to the other study groups, but the non-Head Start sample, on the whole, consists of more severely impaired children.

In any case, least squares regression is the analytical technique used in this evaluation, and its particular limitations should be considered in the following discussion of study results.

# 3

## SPECIAL ANALYTICAL CONSIDERATIONS

This chapter reviews and highlights three special measurement issues of concern. Two involve the Alpern-Boll Developmental Profile: whether parent report data could be validly considered as a substitute for a direct assessment of the child; and the equivalency of a short teacher-form which could be used in the event of parent attrition. The third concerns the measurement of handicap severity.

### Assessment of the Alpern-Boll Developmental Profile as a valid alternative to the Learning Accomplishment Profile-Diagnostic Edition

Since three of the primary study questions presented in Chapter 1 require developmental assessment of each handicapped child, it was necessary to select an instrument that was sensitive to potential baseline/posttest differences across several distinct ability areas. The Alpern-Boll Developmental Profile, a parent report instrument which assesses developmental growth of the child (See Appendix I), was selected as the primary measure.

However, previous experience with the use of parent-report information to assess growth and development of the child by ACYF indicated that the validity of a direct functional child assessment might be substantially better than once removed parent-report data. The Alpern-Boll was selected because:

- required minimum respondent burden;
- required minimum classroom disruption;
- little expense and time required to train certified evaluators;
- offer a measure of social-emotional development, an area deemed of critical importance at the pre-school level;
- provide a full range of measurement in the self-help area; and
- provide a streamlined measure of physical development skills.

Because the validity of using the parent report information was considered questionable by ACYF, it was necessary to assess the validity of information obtained from the Alpern-Boll compared with the direct child assessment data secured from the Learning Accomplishment Profile, diagnostic version (LAP-D). The LAP-D provides a direct functional assessment of a child's abilities in the same general areas as does the Alpern-Boll. A small substudy was developed to determine how well the Alpern-Boll serves as a valid alternative to the LAP-D.

Even though an item-by-item inspection of the two assessment profiles suggests that both instruments assess similar skills, such inspection does not provide information on how close the two measures are for any given group of children. It was necessary to obtain information with which to more precisely estimate the extent of measurement correspondence for these two developmental assessments in order to validate use of the Alpern-Boll.

The LAP-D was administered to a pretest group of 127 children for whom Alpern-Boll profiles were also collected. A total of 111 were retained during posttest data collection. Technical Memorandum No. 1 (Appendix A) describes in detail the Alpern-Boll and LAP-D correlations for this subsample. The correlations between the two tests were relatively poor, while the pretest-posttest correlations for each of the tests were very good. Although the two measures do not seem to be comparable, there is strong evidence that the Alpern-Boll Developmental Profile provides a reliable and sensitive measure of growth and development for the handicapped child. The Alpern-Boll generally showed greater pre-post differences (in the direction of positive growth), more stable variances, and an excellent capability to differentiate by severity level.

Although not psychometrically comparable to the LAP-D, it was concluded that the Alpern-Boll Developmental Profile adequately met the measurement needs of the study.

### The Teacher "Short Form" of the Alpern-Boll Developmental Profile as an Alternative Form in the Event of Parent Attrition or Posttest Absence

Another important issue of concern with respect to the Alpern-Boll was the need to identify a backup source for the developmental growth data in the event the original respondent was unavailable for posttest data collection. In the event of parental absence for the posttest, the primary dependent measure of developmental growth for the child (the Alpern-Boll) would have been unobtainable. Applied Management Sciences anticipated that even with concerted follow-up efforts and parent incentives some amount of attrition could be expected.

If attrition occurred in the handicap categories where the sample size was close to or greater than the desired goal of fifty (50) cases, then these cases would simply be dropped from any analysis which uses the Alpern-Boll. However, if attrition occurred in handicap categories in which the sample size was very small to begin with, then elimination of even a single case could be damaging to analysis efforts. It was crucial, therefore, to carefully consider alternatives to eliminating a case from the study sample.

In anticipation of respondent attrition, field staff were directed to administer to the teachers of 125 randomly selected children the teacher "short form" of the Alpern-Boll Developmental Profile.[1] This information was then used to determine the suitability of the teacher "short form" as an alternative for those cases where the parent could not be interviewed to provide the child growth and development information.

Technical Memorandum No. 2 (Appendix B) presents detailed information on the correlation substudy which was conducted. Pre-test and posttest correlations for the two forms were reasonably high and posttest correlations showed a consistent improvement across all subscales of the Alpern-Boll substantiating earlier impressions that increased teacher familiarity with the handicapped child would improve the posttest correlations. The teacher "Short Form" was judged to be an adequate replacement for the parent report form in the event that the data were not obtainable from any parent source at the time of the posttest.

## Measurement of Handicap Severity

As discussed in Chapter 2, one of the more complicated measurement issues confronted during the evaluation of the Head Start handicapped effort involved the measurement of the severity of a child's handicap. During the initial planning stages of the study, several possible alternatives were considered. Each of these alternatives and the reason for rejecting it as a measurement approach is discussed below.

### *REVIEW OF DIAGNOSTIC/MEDICAL HISTORIES*

One proposed approach to establishing the severity of a child's handicap was to review his/her diagnostic and/or medical records. These data could then be translated into severity levels given state-of-the-art diagnostic standards. For example, severity of retardation could be established on the basis of I.Q. scores that define educable, trainable, severely, and profoundly retarded children. Similarly, decibel loss intervals could define the severity of hearing disabilities. When such readily accessible severity criteria were non-existent, such as in the case of learning disabled, health impaired, and emotionally disturbed children, field staff would accept the diagnostician's judgment of handicap severity.

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[1] Developed by the Appalachian Educational Laboratory, Inc., in Charleston, West Virginia. Used with permission.

This approach was rejected for several reasons. First, experience during Phase I record reviews indicated that in many cases, diagnostic/medical records would not include sufficient information to establish handicap severity. Secondly, there was a conceptual problem of defining severity in terms of physiological, medical, or diagnostic data. Project staff argued convincingly, as did members of the Advisory Panel, that severity should be determined at least in part by functional abilities, particulary for the physically handicapped. For example, one of the sample children was a double amputee who, through the use of prosthetic devices, was able to function quite normally in the classroom setting. From the perspective of records, the child was severely handicapped; from the perspective of developmental milestones, the handicap posed little impairment at all. Another reason for rejecting this approach was that often diagnosticians were not primarily involved in services to the handicapped. Consequently, their frame of reference for determining severity of disability would be quite limited and perhaps no more valid than an untrained observer's. Finally, there was an overriding concern of confidentiality. Confidentiality of diagnostic data was particularly a concern with respect to non-Head Start programs. As one of the directors of a non-Head Start program stated, ACYF could count on his cooperation as long as the study did not involve "rummaging" through records.

### *THE MULTIPLE HANDICAP CRITERION*

Another suggestion for establishing the severity of a child's handicap was to consider the presence of multiple handicaps. However, this approach was considered to be seriously flawed and was never considered an option.

### *PRETEST DEVELOPMENTAL AGE*

Various schemes were also advanced to relate severity of handicap to pretest developmental age. One such approach was to define severity in terms of magnitude of delays relative to chronological age. Another approach was to define severity in terms of age-adjusted pretest standard deviations. The latter strategy was discarded because severity of handicap could not be considered a normally-distributed variable, among other limitations. The former strategy was rejected after more serious consideration for a number of reasons. First, the notion of defining an independent variable as a function of a dependent variable was conceptually unsatisfactory. Secondly, the subscales of the Alpern-Boll may or may not be affected by the child's handicaps. For example, severity of health impairment may not be related to an Alpern-Boll developmental age. While it was anticipated that severity would be significantly correlated with developmental age, project staff and ACYF personnel decided that the use of pretest developmental age as a criterion of severity would result in a measure with dubious validity.

### *PARENTAL REPORT OF HANDICAP SEVERITY*

A final alternative proposed was to solicit parental judgments of the severity of their child's handicap. As with the multiple handicap criterion, this option was never given serious consideration because the parents' limited frame of reference would raise serious questions as to the external validity of this approach to severity measurement.

## *STAFF JUDGMENT OF HANDICAP SEVERITY*

The method of ascertaining severity of handicap that was used during basline data collection was to permit program staff (generally children's teachers) to rate a child's severity on a four-point ordinal scale: mildly handicapped, moderately handicapped, severely handicapped, and profoundly handicapped. To assist in these assessments, field staff presented respondents with index cards which defined severity criteria for each handicap in terms of functional and physiological criteria.

However, review of the pretest data indicated that program staff severity ratings were not comparable between Head Start and non-Head Start programs. As reported in the Interim Technical Report by Rader, et al (1978), Head Start staff tended to overestimate the severity of a child's handicap (or non-Head Start staff underestimated this variable). A possible explanation for this phenomenon was that Head Start enrolls only a relatively small number of handicapped children and that compared to their non-handicapped peers, the handicapped enrollees appeared much more impaired than they would have relative to other handicapped children. Similarly, non-Head Start staff served children primarily in categorical programs established solely for the handicapped. Relative to all children in such programs, a given handicapped child might have been judged to be less severely impaired than he/she would have been in a context with non-handicapped peers. There was also the possibility that differential levels of staff experience with the handicapped also could have contributed to this disparity in severity judgments.

## *FIELD STAFF JUDGMENT OF HANDICAP SEVERITY*

Given the critical nature of the severity variable for the evaluation effort, it was apparent that staff severity judgments would not provide an acceptable severity measure. To address this problem, project staff and ACYF personnel decided to recollect severity data during posttest data collection activities. Judgments on severity were rendered by field staff who observed children in classroom settings with the Prescott-SRI Child Observation System. It was felt that these individuals would be familiar enough with a child's capabilities to provide a valid judgment on severity. Further, because each observer collected data on many different children in Head Start and non-Head Start programs, severity ratings would have a broader frame of reference than those made by project staff. Judgments were made based on the same criteria presented to staff, but it was expected that the additional perspective gained from multiple observations in differing contexts would result in severity measures that were both valid and reliable.[1]

A comparison of ratings made by field staff versus those made by program staff revealed that field staff considered more children to be moderately impaired and fewer children to be severely impaired among Head Start programs, while the opposite trend occurred among non-Head Start programs. This finding was consistent with reasons suggested for the lack of comparability of staff ratings made at the time of the pretest.

As a further check on the increased validity of field staff severity ratings, correlations between subscales of the Alpern-Boll and the severity ratings provided by program and field staffs were computed. As previously stated, it was expected that severity should correlate reasonably well with developmental age as measured by the Alpern-Boll Developmental Profile. The subscale/severity rating correlations are presented in Table 3.1. As is readily apparent, the severity ratings provided by field staff correlate much better with the Alpern-Boll subscales than do ratings provided by program staffs. This is particularly so for the non-Head Start sample. The higher correlations between Alpern-Boll subscales and field staff severity ratings is assumed to reflect a higher validity of their severity judgment than the severity judgments of program staff. It should be noted that it is external validity that is being considered in this case.

Finally, another indication that field staff ratings validly reflect handicap severity may be found in Exhibits A1.1 and A1.2 of Technical Memorandum #1 (Appendix A). These exhibits clearly indicate mean developmental ages for each of the Alpern-Boll subscales decrease substantially at each position of the four-point severity scale.

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[1] Severity assessments of non-served children were made in their respective homes by the same staff responsible for the assessment of severity of the Head Start and non-Head Start children.

## TABLE 3.1

## PEARSON PRODUCT-MOMENT CORRELATIONS FOR SEVERITY RATINGS AND ALPERN-BOLL SUBSCALES BY PROGRAM TYPE

| Alpern-Boll Subscales | Head Start (N=355) | | Non-Head Start (N=300) | | Head Start and Non-Head Start (N=655) | |
|---|---|---|---|---|---|---|
| | Field Staff | Program Staff | Field Staff | Program Staff | Field Staff | Program Staff |
| Physical | 0.36 | 0.27 | 0.53 | 0.21 | 0.48 | 0.28 |
| Self-Help | 0.38 | 0.25 | 0.54 | 0.20 | 0.50 | 0.26 |
| Social | 0.33 | 0.27 | 0.50 | 0.18 | 0.46 | 0.26 |
| Academic | 0.41 | 0.31 | 0.50 | 0.17 | 0.49 | 0.27 |
| Communication | 0.39 | 0.32 | 0.50 | 0.24 | 0.48 | 0.32 |
| I.Q. Equivalency | 0.42 | 0.29 | 0.44 | 0.21 | 0.50 | 0.28 |

Correlation of Field Staff and Program Staff for severity ratings = .48

To reiterate a caution raised in Chapter 2, however, severity of handicap is an extremely difficult concept to operationalize. While the authors are confident that field staff judgments represent the best approximation of this variable for the purpose of this evaluation, the measure must be considered fallible and study results must be interpreted accordingly.

# 4

# STUDY FINDINGS: CHILD SPECIFIC VARIABLES

## Introduction

As indicated in Chapter 2, the study design for Phase II of the evaluation of Head Start services to the handicapped includes provisions for a comparative study of child-specific outcomes among three groups: children enrolled in Head Start programs, children enrolled in non-Head Start programs, and children not enrolled in any program of services. Ideally, placement of children in each of these three groups should occur randomly to avoid confounding the study outcomes with systematic group biases. However, random assignment of subjects in the present study was neither ethical nor economically feasible. Consequently, the proposed group comparisons may also require examination of differential outcomes. Even the cursory review of the distribution of handicapping conditions for each group discussed in Chapter 2 indicates that the groups are not equivalent in several respects. This will require the comparison of non-equivalent groups.

Therefore, the primary purpose of this chapter is to review all of the child-specific and outcome variables measured during the data collection effort and determine those variables where differences exist between groups, or where differential effects within certain variables are apparent which will require special statistical consideration during analyses.

## Overview of Sample Characteristics

A total of 815 children who were enrolled in either Head Start or a designated non-Head Start program were ultimately selected for pretest participation in the study. Children were selected for pretest participation from coded lists which indicated only a child code, program code, and primary handicapping condition. The desired sample goal was for 400 children in each program with equal distribution of all handicapping conditions. To meet this goal at least 40 children of each handicapping condition had to be present in the sampled Head Start programs and 40 additional children in the sampled non-Head Start programs.

### *PRETEST SAMPLE:*

As the random selection of pretest children from the coded lists proceeded, it became obvious that the goal of 40 children from each handicapping condition would not be met for some handicapping conditions. Only three blind and seven deaf children were available for sampling - all were selected for inclusion. Fewer than 25 visually impaired and 35 hearing impaired children were available. While the national incidence level for these few handicapping conditions is relatively small, the actual selection rate for the study significantly underrepresent the expected incidence of occurrence. Two possible phenomena may explain, in part, the low incidence: enrollment of these children in highly specialized (often segregated) "special" programs and the lack of specialized facilities in most preschool programs required to serve children with these particular disabilities.

Staffing, training, data collection procedures, and analysis strategies were all based on a planned for sample of 800 children from the two programs. The low pretest frequency of these four handicapping conditions allowed for some other handicap categories to be sampled at a higher rate. This was most easily accomplished for the handicapping conditions of speech impaired, physically handicapped, and mentally retarded.

The distribution of handicaps by program type for the 782 pretest children enrolled in programs and 154 non-served children is shown in Table 4.1. While the distributions for physically handicapped, specific learning disability, and seriously emotionally disturbed fairly closely approximated the desired goal of 40 cases per handicap, there were notable deficiencies in the sample. The visually impaired, blind, hearing impaired, and deaf children showed very low frequencies (as previously discussed), although they are fairly similar across the different sample groups.

## TABLE 4.1

## DISTRIBUTION OF SAMPLE FOR PROGRAM TYPE AND HANDICAPPING CONDITION

| PRIMARY HANDICAPPING CONDITION | Total % of Column | PROGRAM TYPE | | |
|---|---|---|---|---|
| | | Head Start % of Column | Non-Head Start Programs % of Column | Non-Served % of Column |
| Visually impaired | 2.7<br>(N=25) | 4.7<br>(N=20) | 0.6<br>(N=2) | 1.9<br>(N=3) |
| Blind | 0.6<br>(N=6) | 0.2<br>(N=1) | 0.6<br>(N=2) | 1.9<br>(N=3) |
| Hearing impaired | 3.5<br>(N=32) | 4.4<br>(N=19) | 3.1<br>(N=11) | 1.2<br>(N=2) |
| Deaf | 0.8<br>(N=8) | 1.2<br>(N=5) | 0.6<br>(N=2) | 0.6<br>(N=1) |
| Physical handicap | 18.3<br>(N=170) | 18.6<br>(N=80) | 18.3<br>(N=65) | 16.2<br>(N=25) |
| Speech impaired | 25.5<br>(N=239) | 28.9<br>(N=124) | 15.3<br>(N=54) | 39.6<br>(N=61) |
| Health or developmentally impaired | 13.2<br>(N=124) | 17.2<br>(N=74) | 8.8<br>(N=31) | 12.4<br>(N=19) |
| Mentally retarded | 20.5<br>(N=192) | 11.4<br>(N=49) | 36.5<br>(N=129) | 9.2<br>(N=14) |
| Specific learning disability | 5.4<br>(N=51) | 6.3<br>(N=27) | 6.8<br>(N=24) | 0.0 |
| Serious emotional disturbance | 7.8<br>(N=73) | 7.0<br>(N=30) | 9.3<br>(N=33) | 6.6<br>(N=10) |
| Not specified | 1.7<br>(N=16) | | | 10.4<br>(N=16) |
| TOTAL | 100.0<br>(N=936) | 45.8*<br>(N=429) | 37.7*<br>(N=353) | 16.5*<br>(N=154) |

*Percent of row

Both goals of 40 cases per handicapping condition and equal distributions by program type were not fully met in three other handicap categories (some of which were purposefully over sampled) - speech impaired, health or developmentally impaired, and mentally retarded. The pretest frequency of occurrence of the first two handicapping conditions was twice as high (29% compared with 15% and 17% compared with 9%, respectively) in Head Start programs, while the later condition occurred at three times the rate (37% compared with 11%) in the non-Head Start programs.

*POSTTEST SAMPLE:*

Posttest attrition was limited to only 106 of the 936 pretest sample cases and occurred proportionately for all three study groups. Table 4.2 presents the distribution of the sample of children who were reassessed during posttest data collection by handicapping condition. Both the Head Start and non-Head Start groups retain proportionate size samples over all ten handicapping conditions. The non-served group shows slight fluctuations in handicap category sample sizes from pretest to posttest. For example, the relative size of the health or developmentally impaired category "increased" from pretest size of 12.4 percent (N=19) to posttest size of 14.9 percent (N=18). The emotionally disturbed category dropped from 6.6 percent (N=10) at the pretest to 2.5 percent (N=3) at the posttest. In addition, two handicapping conditions, mental retardation and specific learning disability, showed increases from the pretest data (from 9.2% to 22.5% for the mentally retarded category and from 0.0% to 6.0% for the learning disabled category) because of reclassification of previously "unspecified" cases. Three children (2.5%) in the non-served group remained unspecified. In summary:

- All handicapping conditions are not equally represented.

  Speech impaired children comprise fully one fourth of the sample, yet blind and deaf children comprise less than 1 percent each. Only the health (or developmentally) impaired children appear to be represented at a level approximating 10 percent of the sample (13.7%).

- Each handicapping condition is not equally represented in each study group.

Blind, deaf, physically handicapped, and emotionally disturbed are the only handicapping categories which appear to be distributed with equal frequency across all three study groups. Major deviations in frequency of occurrence are present for speech impaired and health or developmentally impaired (twice as frequent in Head Start compared with non-Head Start yet the health or developmentally impaired comprise almost one half of the non-served group) and mentally retarded (three times as frequent in non-Head Start compared with Head Start and four times compared with the non-served group).

### TABLE 4.2

### DISTRIBUTION OF POSTTEST SAMPLE BY HANDICAPPING CONDITION BY PROGRAM TYPE[1/]

| | PROGRAM TYPE | | | |
|---|---|---|---|---|
| Type of Handicap | Total % of Column | Head Start % of Column | Non-Head Start % of Column | Non-Served % of Column |
| Visually Impaired | 2.4 (N=20) | 4.6 (N=18) | 0.3 (N=1) | 0.7 (N=1) |
| Blind | 0.6 (N=5) | 0.3 (N=1) | 0.6 (N=2) | 1.7 (N=2) |
| Hearing Impaired | 3.4 (N=28) | 3.8 (N=15) | 3.4 (N=11) | 1.7 (N=2) |
| Deaf | 1 .0 (N=8) | 1.3 (N=5) | 0.6 (N=2) | 0.7 (N=1) |
| Physically Handicapped | 19.6 (N=163) | 18.2 (N=71) | 17.4 (N=56) | 14.9 (N=18) |
| Speech Impaired | 26.1 (N=217) | 29.4 (N=115) | 16.2 (N=52) | 41.3 (N=50) |
| Health or Developmentally Impaired | 13.7 (N=114) | 17.1 (N=67) | 9.0 (N=29) | 14.9 (N=18) |
| Mentally Retarded | 22.5 (N=187) | 11.8 (N=46) | 37.4 (N=120) | 17.4 (N=21) |
| Specific Learning Disability | 6.0 (N=50) | 6.9 (N=27) | 6.5 (N=21) | 1.7 (N=2) |
| Serious Emotional Disturbance | 6.7 (N=56) | 6.6 (N=26) | 8.4 (N=27) | 2.5 (N=3) |
| Not Specified | | | | 2.5 (N=3) |
| Total | 100.0* (N=833) | 46.9* (N=391) | 38.6* (N=321) | 14.5* (N=121) |

[1/] This table presents the distribution of children with both Pre-Test and Post-Test data.

[2/] Number of non-served children with identified handicapping conditions = 118; 3 children were not diagnosed.

*Percent of Row

*SEVERITY LEVEL OF HANDICAP:*

Because severity of handicapping condition was believed to be a key determinant of rate of developmental growth and as such may require statistical adjustments for certain analyses, an assessment of this construct was considered crucial. (See Chapter 3.) During pretest data collection teacher ratings of severity level were collected. As reported in the Interim Technical Report, however, these ratings contained gross inconsistencies, due primarily to the relative perspectives on severity by teachers in non-Head Start programs compared with teachers in the Head Start program. As discussed in Chapter 3, in an effort to obtain measures which were at least comparable across programs, and to obtain data on the non-served group, the field staff were trained in the criterion for severity ratings.

Table 4.3 presents the distribution of severity level by program type for these field staff ratings. Table 4.3 shows that the most frequently occurring severity level is the mild level for Head Start (41.8%) and the non-served (40.3%) and the moderate level for non-Head Start (42.4%). As discussed in Chapter 3, the severity of the handicapping condition should be a primary determinant of pretest performance and subsequent gain as assessed at posttest. If significant differences in severity are present, either across handicapping conditions, or across program type then substantial pretest differences can be expected and gains assessed at posttest will be markedly influenced. Table 4.3 shows that there are substantial differences in severity level ratings by program type. These differences are substantial enough across groups to warrant special consideration for statistical adjustments. Table 4.4 shows the distribution of severity level ratings for each handicapping condition. Again, pronounced differences in severity levels are apparent. The profound severity level is consistently under-represented in all handicap categories and both the mentally retarded and the learning disabled categories have an inordinately high percent of moderate severity ratings (almost half).

# TABLE 4.3
# DISTRIBUTION OF SEVERITY LEVEL BY PROGRAM TYPE

| Severity Level | PROGRAM TYPE | | |
|---|---|---|---|
| | Head Start<br>% of column | Non-Head Start<br>% of column | Non-Served<br>% of column |
| Total | 100.0<br>(n=392) | 100.0<br>(n=321) | 100.0<br>(n=119) |
| Mild | 41.8<br>(n=164) | 25.5<br>(n=82) | 40.3<br>(n=48) |
| Moderate | 38.8<br>(n=152) | 42.4<br>(n=136) | 27.7<br>(n=33) |
| Severe | 16.1<br>(n=63) | 23.1<br>(n=74) | 19.3<br>(n=23) |
| Profound | 3.3<br>(n=13) | 9.0<br>(n=29) | 11.8<br>(n=14) |
| Not Specified | * | * | 0.8<br>(n=1) |

## TABLE 4.4

## DISTRIBUTION OF HANDICAPPING CONDITION BY SEVERITY OF HANDICAP, AGGREGATED SAMPLE

| PRIMARY HANDICAPPING CONDITION | SEVERITY LEVEL OF HANDICAP | | | |
|---|---|---|---|---|
| | Mild % of Row | Moderate % of Row | Severe % of Row | Profound % of Row |
| Visually Impaired | 55.0<br>(N=11) | 25.0<br>(N=5) | 15.0<br>(N=3) | 5.0<br>(N=1) |
| Blind | Not Applicable | | | |
| Hearing Impaired | 25.0<br>(N=7) | 42.9<br>(N=12) | 21.4<br>(N=6) | 10.7<br>(N=3) |
| Deaf | Not Applicable | | | |
| Physically Handicapped | 24.8<br>(N=36) | 33.1<br>(N=48) | 30.3<br>(N=44) | 11.7<br>(N=17) |
| Speech Impaired | 49.8<br>(N=108) | 34.6<br>(N=75) | 13.4<br>(N=29) | 2.3<br>(N=5) |
| Health or Developmentally Impaired | 39.5<br>(N=45) | 38.6<br>(N=44) | 17.5<br>(N=20) | 4.39<br>(N=5) |
| Mentally Retarded | 16.6<br>(N=31) | 48.1<br>(N=90) | 25.1<br>(N=47) | 10.2<br>(N=19) |
| Specific Learning Disability | 56.0<br>(N=28) | 44.0<br>(N=22) | * | * |
| Serious Emotional Disburbance | 46.4<br>(N=26) | 41.1<br>(N=23) | 10.7<br>(N=6) | 1.8<br>(N=1) |

## SEX:

Table 4.6 shows the distribution of sex by handicapping condition for the non-Head Start group and Table 4.5 shows this distribution for the Head Start group. Both groups have almost identical overall proportions of boys (60.1% and 61.1%) and girls (39.9% and 38.9%, respectively). This proportion of boys to girls holds for both programs across most of the handicapping conditions. Both programs show that boys are over-represented in both the speech impaired category (73.0% for Head Start and 69.2% for non-Head Start) and in the emotionally disturbed category (69.2% for Head Start and 70.4% for non-Head Start). Only the learning disabled category shows differential representation by sex. While the non-Head Start group shows the same percent of boys (61.9%) as their overall representation (60.1%), the Head Start learning disabled group has substantially fewer (44.4%) than their overall representation in Head Start (61.1%).

Any evidence of sex bias, either in the rate of representation, or in the category of handicapping condition, could affect data analysis efforts. If, for example, boys are over-included in the emotionally disturbed category because of aggressive or "acting out" personality characteristics (typical sex role selection stereotype confirmed by Mercer, 1973), then "progress rates" for these children will be notably different from other emotionally disturbed children who are more accurately categorized. Evidence of sex role bias suggests that handicap classification may not be accurate and that variations in rates of progress can be expected within these classifications. Variations in progress rates that are due to classification errors will add substantial error variance and could contribute significantly to confounding of treatment effects with respect to specific handicapping conditions.

# TABLE 4.5

## DISTRIBUTION OF SEX OF CHILD BY TYPE OF HANDICAP FOR HEAD START

| | Type of Handicap | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Sex of Child | Visually Impaired % of Column | Blind % of Column | Hearing Impaired % of Column | Deaf % of Column | Physically Handicapped % of Column | Speech Impaired % of Column | Health or Developmentally Impaired % of Column | Mentally Retarded % of Column | Specific Learning Disability % of Column | Seriously Emotionally Disturbed % of Column |
| Total 100.0 (N=391) | 100.0 (N = 18) | 100.0 (N = 1) | 100.0 (N = 15) | 100.0 (N = 5) | 100.0 (N = 71) | 100.0 (N = 115) | 100.0 (N = 67) | 100.0 (N = 46) | 100.0 (N = 27) | 100.0 (N = 26) |
| Male 61.1 (N=239) | 44.4 (N = 8) | 100.0 (N = 1) | 60.0 (N = 9) | 40.0 (N = 2) | 57.7 (N = 41) | 73.0 (N = 84) | 55.2 (N = 37) | 58.7 (N = 27) | 44.4 (N = 12) | 69.2 (N = 18) |
| Female 38.9 (N=152) | 55.6 (N = 10) | * | 40.0 (N = 6) | 60.0 (N = 3) | 42.3 (N = 30) | 27.0 (N = 31) | 44.8 (N = 30) | 41.3 (N = 19) | 55.6 (N = 15) | 30.8 (N = 8) |

## TABLE 4.6

## DISTRIBUTION OF SEX OF CHILD BY TYPE OF HANDICAP FOR NON-HEAD START

| | Type of Handicap | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Sex of Child | Visually Impaired % of Column | Blind % of Column | Hearing Impaired % of Column | Deaf % of Column | Physically Handicapped % of Column | Speech Impaired % of Column | Health or Developmentally Impaired % of Column | Mentally Retarded % of Column | Specific Learning Disability % of Column | Serious Emotional Disturb % of Col |
| Total 100.0 (N=321) | 100.0 (N = 1) | 100.0 (N = 2) | 100.0 (N = 11) | 100.0 (N = 2) | 100.0 (N = 56) | 100.0 (N = 52) | 100.0 (N = 29) | 100.0 (N = 120) | 100.0 (N = 21) | 100.0 (N = |
| Male 60.1 (N=195) | * | 50.0 (N = 1) | 63.6 (N = 7) | 100.0 (N = 2) | 57.1 (N = 32) | 69.2 (N = 36) | 58.6 (N = 17) | 55.0 (N = 66) | 61.9 (N = 13) | 70.4 (N = |
| Female 39.9 (N=128) | 100.0 (N = 1) | 50.0 (N = 1) | 36.4 (N = 4) | * | 42.9 (N = 24) | 30.8 (N = 16) | 41.4 (N = 12) | 45.0 (N = 54) | 38.1 (N = 8) | 29.6 (N = |

# TABLE 4.7

## DISTRIBUTION OF ETHNIC ORIGIN BY TYPE OF HANDICAP FOR HEAD START

| | | Type of Handicap | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Ethnic Origin | | Visually Impaired % of Column | Blind % of Column | Hearing Impaired % of Column | Deaf % of Column | Physically Handicapped % of Column | Speech Impaired % of Column | Health or Developmentally Impaired % of Column | Mentally Retarded % of Column | Specific Learning Disability % of Column | Seriously Emotionally Disturbed % of Column |
| Total | 100.0<br>(N=370)* | 100.0<br>(N=18) | 100.0<br>(N=1) | 100.0<br>(N=14) | 100.0<br>(N=4) | 100.0<br>(N=69) | 100.0<br>(N=109) | 100.0<br>(N=63) | 100.0<br>(N=44) | 100.0<br>(N=26) | 100.0<br>(N=22) |
| American Indian or Alaskan Native | 2.7<br>(N=10) | * | * | 7.1<br>(N=1) | * | * | 5.5<br>(N=6) | * | 2.3<br>(N=1) | 7.7<br>(N=2) | * |
| Asian or Pacific Islander | 0.8<br>(N=3) | 5.6<br>(N=1) | * | * | * | 1.4<br>(N=1) | * | 1.6<br>(N=1) | * | * | * |
| Black, not of Hispanic Origin | 34.3<br>(N=127) | 16.7<br>(N=3) | * | 14.3<br>(N=2) | * | 31.9<br>(N=22) | 35.8<br>(N=39) | 30.2<br>(N=19) | 45.5<br>(N=20) | 65.4<br>(N=17) | 22.7<br>(N=5) |
| Hispanic | 10.8<br>(N=40) | 33.3<br>(N=6) | * | 7.1<br>(N=1) | * | 11.6<br>(N=8) | 13.8<br>(N=15) | 11.1<br>(N=7) | 2.3<br>(N=1) | * | 9.1<br>(N=2) |
| White, not of Hispanic Origin | 51.4<br>(N=190) | 44.4<br>(N=8) | 100.0<br>(N=1) | 71.4<br>(N=10) | 100.0<br>(N=4) | 55.1<br>(N=38) | 45.0<br>(N=49) | 57.1<br>(N=36) | 50.0<br>(N=22) | 26.9<br>(N=7) | 68.2<br>(N=15) |

*22 children did not have ethnicity data.

*ETHNICITY:*

Tables 4.7 and 4.8 present the distribution of ethnicity by handicapping condition for both the Head Start and non-Head Start programs, respectively. Two ethnic categories are represented at a very low, but comparable, incidence rate for both programs (American Indian or Alaskan Native and Asian or Pacific Islander). Although the Hispanics are comparably represented, other ethnic differences are apparent. The Black, (not of Hispanic origin) category is represented in the non-Head Start group. This is a level comparable with U.S. Census Bureau Statistics (17.3%), however, Head Start shows twice as many in this category (34.3%). Fully one-half of the handicapped Head Start sample is comprised of minority groups while only one-fourth of the non-Head Start sample is.

Among the Head Start sample, 65.4 percent of those identified as learning disabled and 45.5 percent of those identified as mentally retarded were Black children. The distribution of non-Head Start children across handicapping conditions by ethnicity is fairly consistent with the overall ethnic composition of the non-Head Start sample.

Previous enrollment in a program is shown in Table 4.9. The non-Head Start children have a higher rate of previous program attendance (32.4%) than Head Start children (25.0%). There are two key issues concerning previous program experience: whether this experience varies by study group, and the nature of the 14.3 percent non-served group who report previous enrollment.

Table 4.9 also shows the length of time of enrollment in previous programs for each study group. The length of previous enrollments appears relatively consistent across both Head Start and non-Head Start programs and involves only a small percent of the sample. Between-group comparisons need not necessarily accommodate this variable because differences are not statistically significant at the a priori specified level, and because the absolute difference

# TABLE 4.8

# DISTRIBUTION OF ETHNIC ORIGIN BY TYPE OF HANDICAP FOR NON-HEAD START

| Ethnic Origin | | Type of Handicap<br>Visually Impaired % of Column | Blind % of Column | Hearing Impaired % of Column | Deaf % of Column | Physically Handicapped % of Column | Speech Impaired % of Column | Health or Developmentally Impaired % of Column | Mentally Retarded % of Column | Specific Learning Disability % of Column | Seriously Emotionally Disturbed % of Column |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Total | 100.0<br>(N=306)* | 100.0<br>(N=1) | 100.0<br>(N=2) | 100.0<br>(N=11) | 100.0<br>(N=2) | 100.0<br>(N=53) | 100.0<br>(N=50) | 100.0<br>(N=29) | 100.0<br>(N=113) | 100.0<br>(N=20) | 100.0<br>(N=25) |
| American Indian or Alaskan Native | 0.3<br>(N=1) | * | * | * | * | * | * | * | * | 5.0<br>(N=1) | * |
| Asian or Pacific Islander | 0.7<br>(N=2) | * | * | * | * | * | 2.0<br>(N=1) | * | 0.9<br>(N=1) | * | * |
| Black, not of Hispanic Origin | 17.3<br>(N=53) | * | * | * | * | 9.4<br>(N=5) | 22.0<br>(N=11) | 17.2<br>(N=5) | 19.5<br>(N=22) | 15.0<br>(N=3) | 28.0<br>(N=7) |
| Hispanic | 7.5<br>(N=23) | * | 50.0<br>(N=1) | * | * | 7.5<br>(N=4) | 8.0<br>(N=4) | * | 11.5<br>(N=13) | 5.0<br>(N=1) | * |
| White, not of Hispanic Origin | 74.2<br>(N=227) | 100.0<br>(N=1) | 50.0<br>(N=1) | 100.0<br>(N=11) | 100.0<br>(N=2) | 83.0<br>(N=44) | 68.0<br>(N=34) | 82.8<br>(N=24) | 68.1<br>(N=77) | 75.0<br>(N=15) | 72.0<br>(N=18) |

*15 children did not have ethnicity data.

between programs is fairly small. This will be important for within-group analysis, however, since some children had been enrolled in earlier programs and the treatment effects of the current programs may be difficult to fully interpret, because many identified "treatments" are claimed to have both short- and long-term effects.

### TABLE 4.9

### DISTRIBUTION OF PROGRAM TYPE BY YEARS OF ENROLLMENT IN A PREVIOUS PROGRAM

| Years of Enrollment in Previous Program | Program Type | | |
|---|---|---|---|
| | Head Start % of Column | Non-Head Start % of Column | Non-Served % of Column |
| Total | 100.0<br>(N=392) | 100.0<br>(N=321) | 100.0<br>(N=119) |
| Never enrolled in a previous program | 75.0<br>(N=294) | 67.6<br>(N=217) | 85.7<br>(N=102) |
| Less than 1 year | 8.4<br>(N=33) | 11.2<br>(N=36) | 7.6<br>(N=9) |
| 1 year | 8.2<br>(N=32) | 9.3<br>(N=30) | 4.2<br>(N=5) |
| 2 years | 5.9<br>(N=23) | 7.5<br>(N=24) | 1.7<br>(N=2) |
| 3 or more years | 2.6<br>(N=10) | 4.4<br>(N=14) | 0.8<br>(N=1) |

Three children in the non-served sample (2.5%) report previous enrollment for two or more years. According to the responses on open-ended items, the nature of these program experiences were custodial day care only or clinic based itinerant therapy which was administered only an average of four hours a month. In other words, the program was directed towards remedial efforts only, and not a total child approach.

## Summary and Conclusions

- Handicapping conditions are not equally represented either in the overall sample or across the three identified study groups. Analyses must be handicap specific.
- The milder severity levels of handicaps are represented at a considerably higher rate than the more severe handicapped; severity must be adjusted for in-between groups analyses and for analyses comparing handicapping conditions.
- Boys are overrepresented in the study sample as a whole and two handicap conditions show possible evidence of sex bias (emotionally disturbed and speech impaired).
- Children with experience in a previous program are relatively infrequent and those with prior program experience tend to have had short term enrollments.

## Outcome Variable

The Alpern-Boll is the primary dependent measure for the study and the California Preschool Social Competency Scale is the secondary measure. As has already been discussed, handicapping conditions are not equally represented either with respect to programs or relative to the type of handicap. Also, variations of the dependent measures by handicapping condition indicate some additional confounding which must be resolved. The major issue for consideration here is the consistency of pretest and posttest variances in developmental ages and percentile scores which might indicate substantive or qualitative differences in handicapping condition or rate of developmental progress. Since mean changes in pretest-posttest performance on the dependent measures constitute the primary outcome analysis, it is crucial to determine the stability of the variances for these measures.

### *DEVELOPMENTAL STATUS:*

Mean Alpern-Boll developmental age scores and standard deviations for each handicapping condition by program type and for the group as a whole are presented in Tables 4.10A through 4.21. Also shown in each

## TABLE 4.10 A

## MEAN ALPERN-BOLL SCORES AND STANDARD DEVIATIONS BY PROGRAM TYPE

| Developmental Scale | HEAD START (N=390) | | | | | NON-HEAD START (N=321) | | | | | [illegible] (N=119) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PRETEST | | POSTTEST | | | PRETEST | | POSTTEST | | | PRETEST | | POSTTEST | | |
| | Mean Score* | Standard Deviation | Mean Score | Standard Deviation | Mean Change | Mean Score | Standard Deviation | Mean Score | Standard Deviation | Mean Change | Mean Score | Standard Deviation | Mean Score | Standard Deviation | Mean Change |
| Physical Age | 54.1 | 21.6 | 60.9 | 21.8 | 6.8d | 38.6 | 22.6 | 41.9 | 23.5 | 3.3d | 37.1 | 18.8 | 41.3 | 22.2 | 4.2d |
| Self-Help Age | 61.8 | 19.8 | 69.1 | 19.2 | 7.3d | 44.3 | 23.7 | 49.2 | 24.9 | 4.9d | 40.3 | 20.4 | 47.0 | 24.1 | 6.7d |
| Social Age | 56.4 | 17.2 | 62.8 | 17.7 | 6.4d | 44.0 | 19.6 | 47.2 | 21.6 | 3.2d | 37.9 | 16.4 | 42.5 | 19.9 | 4.6d |
| Academic Age | 47.1 | 14.9 | 54.9 | 16.3 | 7.8d | 37.0 | 17.7 | 42.1 | 20.0 | 5.1d | 33.6 | 13.9 | 37.7 | 16.1 | 4.1d |
| Communication Age | 45.4 | 16.5 | 53.4 | 18.8 | 8.0d | 35.7 | 19.0 | 40.2 | 20.3 | 4.5d | 32.3 | 15.6 | 37.5 | 18.3 | 5.2d |
| IQ Equivalency | 84.6 | 25.4 | 89.0 | 25.0 | 4.4d | 69.0 | 28.8 | 71.1 | 30.8 | 2.1d | 74.0 | 29.7 | 72.7 | 29.4 | -1.3d |
| Mean Severity Level (Mild = 1, Profound = 4) | 1.8 | | | | | 2.2 | | | | | 2.1 | | | | |
| Mean Chronological Age at Post Test (in Months) | 61.8 | | | | | 60.3 | | | | | 57.6 | | | | |

*Mean developmental age scores (in months).

a. Too few cases to establish significance
b. Significant at the .1 level
c. Significant at the .05 level
d. Significant at the .01 level

# TABLE 4.10B

## SIGNIFICANT CHANGES[1] IN MEAN ALPERN-BOLL SCORES FOR ALL HANDICAPPING CONDITIONS

| Developmental Scale / Handicapping Condition | Physical Age | Self-Help Age | Social Age | Academic Age | Communication Age | I.Q. Equivalency |
|---|---|---|---|---|---|---|
| **Total** | | | | | | |
| Head Start | + | + | + | + | + | + |
| Non-Head Start | + | + | + | + | + | + |
| Non-Served | + | + | + | + | 0 | 0 |
| **Visually Impaired** | | | | | | |
| Head Start | 0 | 0 | 0 | 0 | 0 | 0 |
| Non-Head Start[2] | 0 | 0 | 0 | 0 | 0 | 0 |
| Non-Served[2] | 0 | 0 | 0 | 0 | 0 | 0 |
| **Blind** | | | | | | |
| Head Start[2] | 0 | 0 | 0 | + | 0 | 0 |
| Non-Head Start[2] | 0 | + | 0 | + | 0 | 0 |
| Non-Served[2] | 0 | 0 | 0 | 0 | 0 | 0 |
| **Hearing Impaired** | | | | | | |
| Head Start | 0 | 0 | 0 | + | 0 | 0 |
| Non-Head Start | 0 | + | 0 | + | 0 | 0 |
| Non-Served[2] | 0 | 0 | 0 | 0 | 0 | 0 |
| **Deaf** | | | | | | |
| Head Start[2] | 0 | 0 | 0 | 0 | 0 | 0 |
| Non-Head Start[2] | 0 | 0 | 0 | 0 | 0 | 0 |
| Non-Served[2] | 0 | 0 | 0 | 0 | 0 | 0 |
| **Other Handicapped[3]** | | | | | | |
| Head Start | + | + | + | + | + | 0 |
| Non-Head Start | 0 | + | 0 | + | 0 | 0 |
| Non-Served | 0 | 0 | 0 | 0 | 0 | 0 |
| **Physically Handicapped** | | | | | | |
| Head Start | + | + | + | + | + | 0 |
| Non-Head Start | 0 | 0 | + | + | 0 | 0 |
| Non-Served | 0 | 0 | 0 | 0 | + | 0 |
| **Speech Impaired** | | | | | | |
| Head Start | + | + | + | + | + | + |
| Non-Head Start | 0 | + | 0 | + | + | 0 |
| Non-Served | + | + | + | + | + | 0 |
| **Health or Developmentally Impaired** | | | | | | |
| Head Start | 0 | + | 0 | + | + | + |
| Non-Head Start | 0 | + | 0 | + | + | 0 |
| Non-Served | 0 | + | 0 | 0 | + | 0 |
| **Mentally Retarded** | | | | | | |
| Head Start | 0 | + | 0 | + | + | + |
| Non-Head Start | 0 | + | 0 | + | + | 0 |
| Non-Served | 0 | + | 0 | 0 | + | 0 |
| **Specific Learning Disability** | | | | | | |
| Head Start | 0 | 0 | 0 | + | + | 0 |
| Non-Head Start | 0 | 0 | 0 | 0 | 0 | 0 |
| Non-Served[2] | 0 | 0 | 0 | 0 | 0 | 0 |
| **Seriously Emotionally Disturbed** | | | | | | |
| Head Start | + | 0 | 0 | + | 0 | 0 |
| Non-Head Start | 0 | 0 | 0 | 0 | 0 | 0 |
| Non-Served[2] | 0 | 0 | 0 | 0 | 0 | 0 |

[1] (+) = positive change significant at the .01 level; (-) = negative change significant at the .01 level; (0) = no significant change.

[2] Too few cases to establish significance.

[3] The category "other" includes blind, visually impaired, deaf and hearing impaired.

table is the mean severity level rating for that handicapping condition by program type. Severity of handicap was rated by field staff based on observation of the child on a four point scale: mild=1, moderate=2, severe=3, and profound=4. The higher the mean rating, the more severe the handicap.

Table 4.10A shows the overall scores for the three program types. Each group shows consistent raw gains for all Alpern-Boll subscales. Head Start shows the greatest overall gains, each subscale exceeding the six month pre-post interim. Both non-Head Start and non-served show moderate gains of 4 or 5 months each, although the higher severity levels suggest a slower developmental rate would not be unexpected. Table 4.10B shows significant changes pre to post for all three study groups.

To facilitate clarity, the following discussion will first be handicap specific and then focus on issues across handicapping conditions.

Low Incidence Handicaps: As discussed previously and in the Interim Technical Report, four handicapping conditions occur with such a low frequency that program relevant comparisons for each are not feasible. Tables 4.11 through 4.14 present the mean Alpern-Boll scores for this group (blind, visually impaired, deaf, and hearing impaired). Of special note is the wide variation from pretest to posttest for the standard deviations for each program sample and the wide fluctuations of mean changes across programs. For example, on the Social Age scale the hearing impaired sample (Table 4.13) showed a 6.8 gain for Head Start, a 1.8 gain for non-Head Start, and a 22.0 gain for the non-served, while the visually impaired showed a 6.1 gain for Head Start, no change for the non-Head Start child (N=1), and a 12.0 point loss for the non-served.

Table 4.15 presents the same information aggregated for all four handicapping conditions. Pretest and posttest standard deviations are generally within 2 or 3 points of each other. The single exception to this is the Social Age scale for the non-served ($\sigma=9.7$), although the small sample size (N=5) easily accounts for this high variability.

# TABLE 4.11

## MEAN ALPERN-BOLL SCORES AND STANDARD DEVIATIONS BY PROGRAM TYPE FOR THE VISUALLY IMPAIRED

| Developmental Scale | HEAD START (N=18) | | | | | NON-HEAD START (N=1) a | | | | | NONSERVED (N=1) a | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PRETEST | | POSTTEST | | | PRETEST | | POSTTEST | | | PRETEST | | POSTTEST | | |
| | Mean Score* | Standard Deviation | Mean Score | Standard Deviation | Mean Change | Mean Score | Standard Deviation | Mean Score | Standard Deviation | Mean Change | Mean Score | Standard Deviation | Mean Score | Standard Deviation | Mean Change |
| Physical Age | 51.2 | 18.4 | 60.3 | 22.9 | 9.1b | 38.0 | 0.0 | 44.0 | 0.0 | 6.0 | 36.0 | 0.0 | 42.0 | 0.0 | 6.0 |
| Self-Help Age | 59.4 | 18.6 | 67.3 | 17.8 | 7.9c | 50.0 | 0.0 | 58.0 | 0.0 | 8.0 | 44.0 | 0.0 | 60.0 | 0.0 | 16.0 |
| Social Age | 56.8 | 14.0 | 62.9 | 15.1 | 6.1 | 56.0 | 0.0 | 56.0 | 0.0 | 0.0 | 42.0 | 0.0 | 30.0 | 0.0 | -12.0 |
| Academic Age | 48.6 | 14.9 | 43.3 | 17.7 | 4.7 | 38.0 | 0.0 | 46.0 | 0.0 | 8.0 | 42.0 | 0.0 | 38.0 | 0.0 | - 4.0 |
| Communication Age | 47.6 | 13.2 | 53.9 | 16.4 | 6.3c | 42.0 | 0.0 | 44.0 | 0.0 | 2.0 | 44.0 | 0.0 | 42.0 | 0.0 | - 2.0 |
| IQ Equivalency | 94.1 | 26.5 | 90.7 | 26.3 | -3.4 | 90.0 | 0.0 | 98.0 | 0.0 | 8.0 | 113.0 | 0.0 | 92.0 | 0.0 | -21.0 |
| Mean Severity Level (Mild = 1, Profound = 4) | 1.6 | | | | | 3.0 | | | | | 1.0 | | | | |
| Mean Chronological Age at Post-Test (in Months) | 58.1 | | | | | 48.0 | | | | | 48.0 | | | | |

*Mean developmental age scores (in months).

a. Too few cases to establish significance
b. Significant at the .1 level
c. Significant at the .05 level
d. Significant at the .01 level

## TABLE 4.12

## MEAN ALPERN-BOLL SCORES AND STANDARD DEVIATIONS BY PROGRAM TYPE FOR THE BLIND

| Developmental Scale | HEAD START (N=1) a | | | | | NON-HEAD START (N=2) a | | | | | NONSERVED (N=2)a | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PRETEST | | POSTTEST | | | PRETEST | | POSTTEST | | | PRETEST | | POSTTEST | | |
| | Mean Score* | Standard Deviation | Mean Score | Standard Deviation | Mean Change | Mean Score | Standard Deviation | Mean Score | Standard Deviation | Mean Change | Mean Score | Standard Deviation | Mean Score | Standard Deviation | Mean Change |
| Physical Age | 68.0 | 0.0 | 56.0 | 0.0 | -12.0 | 23.0 | 7.1 | 26.0 | 11.3 | 3.0 | 22.0 | 8.5 | 25.0 | 7.1 | 3.0 |
| Self Help Age | 83.0 | 0.0 | 74.0 | 0.0 | - 8.0 | 28.0 | 2.8 | 55.0 | 38.2 | 27.0 | 17.0 | 7.1 | 21.0 | 1.4 | 4.0 |
| Social Age | 62.0 | 0.0 | 66.0 | 0.0 | 4.0 | 39.0 | 15.6 | 46.0 | 19.8 | 7.0 | 23.0 | 1.4 | 25.0 | 1.4 | 2.0 |
| Academic Age | 44.0 | 0.0 | 52.0 | 0.0 | 8.0 | 20.5 | 0.7 | 45.0 | 35.4 | 24.5 | 17.5 | 0.7 | 20.5 | 0.7 | 3.0 |
| Communication Age | 52.0 | 0.0 | 58.0 | 0.0 | 6.0 | 28.0 | 2.8 | 49.0 | 29.7 | 21.0 | 39.0 | 1.4 | 44.0 | 2.8 | 5.0 |
| IQ Equivalency | 67.0 | 0.0 | 72.0 | 0.0 | 5.0 | 40.5 | 13.4 | 69.5 | 37.5 | 29.0 | 37.5 | 2.1 | 40.0 | 2.8 | 2.5 |
| Mean Severity Level (Mild = 1, Profound = 4) | | 3.0 | | | | | 2.0 | | | | | 4.0 | | | |
| Mean Chronological Age at Post-Test (in Months) | | | | 71.0 | | | | | 59.5 | | | | | 58.5 | |

*Mean developmental age scores (in months).

a. Too few cases to establish significance.

# TABLE 4.13

## MEAN ALPERN-BOLL SCORES AND STANDARD DEVIATIONS BY PROGRAM TYPE FOR THE HEARING IMPAIRED

| Developmental Scale | HEAD START (N=15) | | | | | NON-HEAD START (N=11) | | | | | NONSERVED (N=2) a | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PRETEST | | POSTTEST | | | PRETEST | | POSTTEST | | | PRETEST | | POSTTEST | | |
| | Mean Score* | Standard Deviation | Mean Score | Standard Deviation | Mean Change | Mean Score | Standard Deviation | Mean Score | Standard Deviation | Mean Change | Mean Score | Standard Deviation | Mean Score | Standard Deviation | Mean Change |
| Physical Age | 62.3 | 15.9 | 68.8 | 15.5 | 6.5 | 59.3 | 23.2 | 64.7 | 19.3 | 5.5 | 55.0 | 1.4 | 59.0 | 1.4 | 4.0 |
| Self Help Age | 68.7 | 14.8 | 73.9 | 17.3 | 5.2 | 58.7 | 17.1 | 72.2 | 18.2 | 13.5d | 74.0 | 0.0 | 74.0 | 22.6 | 0.0 |
| Social Age | 58.1 | 15.6 | 64.9 | 20.7 | 6.8 | 58.7 | 14.4 | 60.5 | 14.2 | 1.8 | 47.0 | 15.6 | 69.0 | 21.2 | 22.0 |
| Academic Age | 49.2 | 11.7 | 57.5 | 17.5 | 8.3d | 43.8 | 15.5 | 51.4 | 14.7 | 7.6d | 37.0 | 1.4 | 51.0 | 1.4 | 14.0 |
| Communication Age | 44.2 | 17.8 | 52.9 | 20.2 | 8.7b | 33.5 | 11.7 | 36.4 | 14.0 | 2.9 | 35.0 | 9.9 | 53.0 | 12.7 | 18.0 |
| IQ Equivalency | 86.3 | 16.2 | 90.8 | 23.5 | 4.5 | 73.5 | 13.1 | 76.8 | 14.8 | 3.3 | 82.5 | 10.6 | 110.5 | 0.7 | 28.0 |
| Mean Severity Level (Mild = 1, Profound = 4) | | 1.8 | | | | | 2.7 | | | | | 2.0 | | | |
| Mean Chronological Age at Post-Test (in Months) | | | | 62.8 | | | | | 62.4 | | | | | 57.0 | |

*Mean developmental age scores (in months).

a. Too few cases to establish significance
b. Significant at the .1 level
c. Significant at the .05 level
d. Significant at the .01 level

### TABLE 4.14

### MEAN ALPERN-BOLL SCORES AND STANDARD DEVIATIONS BY PROGRAM TYPE FOR THE DEAF

| Developmental Scale | HEAD START (N=5) a | | | | | NON-HEAD START (N=2) a | | | | | NONSERVED (N=1) a | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PRETEST | | POSTTEST | | | PRETEST | | POSTTEST | | | PRETEST | | POSTTEST | | |
| | Mean Score * | Standard Deviation | Mean Score | Standard Deviation | Mean Change | Mean Score | Standard Deviation | Mean Score | Standard Deviation | Mean Change | Mean Score | Standard Deviation | Mean Score | Standard Deviation | Mean Change |
| Physical Age | 53.6 | 13.5 | 65.2 | 11.4 | 11.6 | 58.0 | 22.6 | 77.0 | 18.4 | 19.0 | 30.0 | 0.0 | 32.0 | 0.0 | 2.0 |
| Self-Help Age | 56.0 | 13.3 | 76.8 | 13.2 | 20.8 | 68.0 | 2.8 | 88.0 | 2.8 | 20.0 | 34.0 | 0.0 | 34.0 | 0.0 | 0.0 |
| Social Age | 50.6 | 12.1 | 66.8 | 16.8 | 16.2 | 60.0 | 2.8 | 74.0 | 0.0 | 14.0 | 24.0 | 0.0 | 28.0 | 0.0 | 4.0 |
| Academic Age | 42.4 | 9.6 | 54.4 | 14.3 | 12.0 | 57.0 | 7.1 | 72.0 | 14.1 | 15.0 | 24.0 | 0.0 | 28.0 | 0.0 | 4.0 |
| Communication Age | 24.4 | 7.5 | 33.2 | 15.0 | 8.8 | 37.0 | 7.1 | 51.0 | 21.2 | 14.0 | 10.0 | 0.0 | 12.0 | 0.0 | 2.0 |
| IQ Equivalency | 86.2 | 16.3 | 98.8 | 9.7 | 12.6 | 94.5 | 2.1 | 107.5 | 6.4 | 13.0 | 41.0 | 0.0 | 43.0 | 0.0 | 2.0 |
| Mean Severity Level (Mild = 1, Profound = 4) | 3.4 | | | | | 3.5 | | | | | 4.0 | | | | |
| Mean Chronological Age at Post-Test (in Months) | 55.8 | | | | | 66.5 | | | | | 70.0 | | | | |

*Mean developmental age scores (in months).

a. Too few cases to establish significance

## TABLE 4.15

## MEAN ALPERN-BOLL SCORES AND STANDARD DEVIATIONS BY PROGRAM TYPE FOR OTHER[1/] HANDICAPPED

| Developmental Scale | HEAD START (N=45) |  |  |  |  | NON-HEAD START (N=17) |  |  |  |  | [illegible] (N=5)a |  |  |  |  |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  | PRETEST |  | POSTTEST |  |  | PRETEST |  | POSTTEST |  |  | PRETEST |  | POSTTEST |  |  |
|  | Mean Score* | Standard Deviation | Mean Score | Standard Deviation | Mean Change | Mean Score | Standard Deviation | Mean Score | Standard Deviation | Mean Change | Mean Score | Standard Deviation | Mean Score | Standard Deviation | Mean Change |
| Physical Age | 56.2 | 17.1 | 64.1 | 18.8 | 7.9d | 53.3 | 23.8 | 60.1 | 22.5 | 6.8c | 36.7 | 15.6 | 40.3 | 16.1 | 3.7 |
| Self-Help Age | 63.1 | 17.0 | 71.2 | 16.9 | 8.1d | 55.5 | 18.1 | 71.1 | 20.1 | 15.6d | 43.3 | 26.1 | 47.3 | 27.1 | 4.0 |
| Social Age | 56.6 | 14.1 | 64.3 | 17.1 | 7.7d | 56.3 | 14.2 | 60.1 | 14.7 | 3.8d | 34.3 | 14.1 | 41.0 | 23.8 | 6.7 |
| Academic Age | 47.9 | 12.8 | 55.0 | 16.7 | 7.1d | 42.2 | 16.1 | 52.8 | 17.4 | 10.6d | 29.2 | 10.9 | 34.8 | 14.1 | 5.6 |
| Communication Age | 43.4 | 16.1 | 51.0 | 18.5 | 7.6d | 33.8 | 10.3 | 40.3 | 16.0 | 6.5c | 33.8 | 12.9 | 41.3 | 16.2 | 7.5 |
| IQ Equivalency | 89.4 | 21.6 | 91.3 | 23.3 | 1.9 | 73.1 | 18.7 | 81.1 | 19.6 | 8.0 | 65.7 | 32.0 | 72.7 | 35.4 | 7.0 |
| Mean Severity Level (Mild = 1, Profound = 4) | 2.0 |  |  |  |  | 2.7 |  |  |  |  | 2.8 |  |  |  |  |
| Mean Chronological Age at Post-Test (in Months) |  |  | 59.9 |  |  |  |  | 61.7 |  |  |  |  | 58.2 |  |  |

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[1/] "Other" includes the Blind, Visually Impaired, Deaf, and Hearing Impaired.

*Mean developmental age scores (in months).

a. Too few cases to establish significance
b. Significant at the .1 level
c. Significant at the .05 level
d. Significant at the .01 level

Table 4.15 also shows that developmental age gains, while consistent for the Head Start and non-served groups, evidenced differential gains for the non-Head Start group across developmental measures. The non-Head Start group showed exceptional gains in Self Help (15.6 months) and Academic Age (10.6 months) but only moderate gains in Social Age (3.8 months). Head Start gains averaged 7 or 8 months and non-served gains averaged 5 or 6 months.

Overall, the small sample size for these four handicapping conditions does not allow any handicap specific comparisons. However, aggregating the four categories improves the differences in pre and post standard deviations (the differences are reduced) and achieves reasonably comparable variances across programs.

Physically Handicapped: Table 4.16 presents the developmental scores on the 80 Head Start, 64 non-Head Start, and 18 non-served children classified as physically handicapped. The Head Start group shows the most consistent pre-post gains (averaging from 5.9 to 7.5 months), and the non-Head Start group shows relatively small gains (1.3 to 5.5 months). However, the non-Head Start group is rated as more severely handicapped (2.7 compared with 2.0 for Head Start and 2.4 for non-served). The marked age differences between program samples, the Head Start group being older and the non-served group being eight months younger, as well as differences in severity level, make direct posttest comparisons possible only with statistical adjustments for these differences.

Statistical adjustments for these variables, however, require reasonably homogeneous and comparable variances. The standard deviations for this sample are shown for both pretest and posttest data and across programs. Pre-post standard deviations are especially close and differences across programs are fairly small, the largest difference being between Head Start ($\sigma$=13.6) and non-Head Start ($\sigma$=23.1) on the posttest Academic Age scales.

# TABLE 4.16

## MEAN ALPERN-BOLL SCORES AND STANDARD DEVIATIONS BY PROGRAM TYPE FOR THE PHYSICALLY HANDICAPPED

| Developmental Scale | HEAD START (N=80) | | | | | NON-HEAD START (N=61) | | | | | NONSERVED (N=18) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PRETEST | | POSTTEST | | | PRETEST | | POSTTEST | | | PRETEST | | POSTTEST | | |
| | Mean Score* | Standard Deviation | Mean Score | Standard Deviation | Mean Change | Mean Score | Standard Deviation | Mean Score | Standard Deviation | Mean Change | Mean Score | Standard Deviation | Mean Score | Standard Deviation | Mean Change |
| Physical Age | 44.0 | 20.2 | 49.9 | 21.6 | 5.9d | 22.7 | 17.5 | 24.0 | 18.2 | 1.3 | 25.9 | 18.6 | 28.9 | 23.6 | 3.0 |
| Self Help Age | 57.4 | 20.6 | 64.6 | 19.4 | 7.2d | 32.9 | 21.7 | 37.2 | 24.0 | 4.3c | 31.3 | 20.2 | 36.3 | 24.3 | 5.0b |
| Social Age | 56.1 | 16.4 | 62.0 | 18.2 | 5.9d | 40.8 | 20.1 | 46.1 | 23.9 | 5.3d | 33.3 | 16.2 | 40.2 | 20.1 | 6.9c |
| Academic Age | 47.8 | 14.2 | 54.4 | 13.6 | 6.6d | 37.6 | 18.6 | 43.1 | 23.1 | 5.5d | 28.9 | 11.5 | 34.3 | 15.2 | 5.4c |
| Communication Age | 48.9 | 16.2 | 56.4 | 16.4 | 7.5d | 40.4 | 21.8 | 43.6 | 24.9 | 3.2b | 32.3 | 17.0 | 40.7 | 21.9 | 8.4d |
| IQ Equivalency | 88.3 | 27.6 | 89.9 | 23.3 | 1.7 | 74.8 | 34.8 | 77.0 | 39.2 | 2.2 | 69.0 | 31.8 | 74.9 | 34.0 | 5.9 |
| Mean Severity Level (Mild = 1, Profound = 4) | | 2.0 | | | | | 2.7 | | | | | 2.2 | | | |
| Mean Chronological Age at Post-Test (in Months) | | | | 60.9 | | | | | 56.3 | | | | | 52.9 | |

*Mean developmental age scores (in months).

a. Too few cases to establish significance
b. Significant at the .1 level
c. Significant at the .05 level
d. Significant at the .01 level

Speech Impaired: Baseline and posttest data were collected on 122 Head Start, 55 non-Head Start, and 50 non-served speech impaired. Table 4.17 shows that Head Start children again show the most consistent and positive gains (averaging 5.9 to 10.1 months) compared with less than month for month gains overall by the non-served group (4.9 to 7.6 months). Severity levels are comparable (mild to moderate) and the Head Start group is only 4.5 months older.

Most remarkable is the unusually close standard deviations from pretest to posttest and across programs. Such close comparability of the measure of variation enables difference testing to proceed with a high level of confidence. The speech impaired group will enable especially effective analysis tests to identify program (treatment) effects.

Health or Developmentally Impaired: Table 4.18 presents the developmental scores for the 74 Head Start, 32 non-Head Start, and 18 non-served cases. Again, Head Start shows the largest consistent gains from pre to post (5.5 to 7.9 months) compared with the rather marginal progress of the non-served (1.2 to 3.9 months) and the more moderate non-Head Start gains (3.8 to 6.5 months). However, the non-served group is rated significantly more severely handicapped (2.6) compared with non-Head Start (2.0) and Head Start (1.6) while ages are very close. Head Start is slightly older (58.7 months) than either non-Head Start (54.2 months) or non-served (57.1 months).

While comparability of the standard deviations from pretest to posttest is relatively good, the comparability across programs varies by developmental scale. Both the Physical and Communication Age scales show standard deviation differences exceeding 9 points, while the other scales generally show only 4 or 5 points difference across programs. Statistical adjustments on these scales may be difficult because of heterogeneous variance.

Mentally Retarded: The sample of mentally retarded cases is shown in Table 4.19. Head Start has 49 children, non-Head Start has 130, and there are 21 non-served. The largest and most consistent gains are shown by the Head Start sample (5.0 to 7.4 months) which are also rated the least severely handicapped (2.1) compared with non-Head Start (2.3) and non-served (2.8).

## TABLE 4.17

## MEAN ALPERN-BOLL SCORES AND STANDARD DEVIATIONS BY PROGRAM TYPE FOR THE SPEECH IMPAIRED

| Developmental Scale | HEAD START (N=122) | | | | | NON-HEAD START (N=55) | | | | | NONSERVED (N=50) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PRETEST | | POSTTEST | | | PRETEST | | POSTTEST | | | PRETEST | | POSTTEST | | |
| | Mean Score * | Standard Deviation | Mean Score | Standard Deviation | Mean Change | Mean Score | Standard Deviation | Mean Score | Standard Deviation | Mean Change | Mean Score | Standard Deviation | Mean Score | Standard Deviation | Mean Change |
| Physical Age | 62.1 | 20.6 | 68.0 | 20.0 | 5.9 d | 54.4 | 19.1 | 60.5 | 19.6 | 6.1 c | 48.8 | 15.5 | 54.4 | 18.8 | 5.6d |
| Self Help Age | 66.0 | 18.4 | 74.8 | 15.3 | 8.8 d | 59.3 | 22.3 | 64.9 | 21.6 | 5.6 d | 53.6 | 16.9 | 61.2 | 18.1 | 7.6d |
| Social Age | 60.1 | 15.3 | 67.6 | 14.0 | 7.5 d | 54.4 | 16.2 | 60.2 | 17.0 | 5.8 c | 47.7 | 15.2 | 52.6 | 17.1 | 4.9d |
| Academic Age | 49.4 | 14.1 | 58.7 | 14.6 | 9.3 d | 46.3 | 14.6 | 54.2 | 16.1 | 7.9 d | 41.8 | 13.3 | 46.7 | 14.2 | 4.9d |
| Communication Age | 45.2 | 14.3 | 55.3 | 16.8 | 10.1d | 41.7 | 14.1 | 49.9 | 15.7 | 8.2 d | 37.3 | 15.7 | 43.2 | 17.5 | 5.9d |
| IQ Equivalency | 87.2 | 22.6 | 93.6 | 22.7 | 6.4 d | 88.1 | 22.8 | 94.0 | 20.1 | 5.9 c | 91.3 | 23.3 | 87.1 | 19.3 | -4.2d |
| Mean Severity Level (Mild = 1, Profound = 4) | | 1.7 | | | | | 1.8 | | | | | 1.5 | | | |
| Mean Chronological Age at Post-Test (in Months) | | | | 62.5 | | | | | 57.8 | | | | | 58.0 | |

*Mean developmental age scores (in months).

- a. Too few cases to establish significance
- b. Significant at the .1 level
- c. Significant at the .05 level
- d. Significant at the .01 level

## TABLE 4.18

## MEAN ALPERN-BOLL SCORES AND STANDARD DEVIATIONS BY PROGRAM TYPE FOR THE HEALTH OR DEVELOPMENTALLY IMPAIRED

| Developmental Scale | HEAD START (N=74) | | | | | NON-HEAD START (N=32) | | | | | NONSERVED (N=18) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PRETEST | | POSTTEST | | | PRETEST | | POSTTEST | | | PRETEST | | POSTTEST | | |
| | Mean Score* | Standard Deviation | Mean Score | Standard Deviation | Mean Change | Mean Score | Standard Deviation | Mean Score | Standard Deviation | Mean Change | Mean Score | Standard Deviation | Mean Score | Standard Deviation | Mean Change |
| Physical Age | 51.8 | 20.9 | 59.7 | 22.1 | 7.9d | 27.9 | 11.3 | 32.9 | 15.1 | 5.0d | 27.6 | 17.6 | 26.4 | 16.0 | -1.2 |
| Self Help Age | 60.5 | 21.0 | 67.8 | 22.2 | 7.3d | 34.6 | 14.5 | 41.0 | 19.6 | 6.4d | 28.5 | 14.1 | 32.4 | 18.6 | 3.9 |
| Social Age | 55.5 | 18.5 | 61.0 | 20.6 | 5.5d | 35.7 | 12.8 | 39.9 | 18.0 | 4.2d | 28.1 | 12.8 | 24.0 | 15.6 | 0.9 |
| Academic Age | 45.6 | 15.3 | 52.7 | 18.7 | 7.1d | 29.1 | 10.9 | 35.6 | 15.7 | 6.5d | 25.5 | 11.3 | 28.8 | 14.3 | 3.3 |
| Communication Age | 46.5 | 17.4 | 53.2 | 22.1 | 6.7d | 29.9 | 13.6 | 33.7 | 15.9 | 3.8c | 27.4 | 11.4 | 29.4 | 13.8 | 2.0 |
| IQ Equivalency | 86.7 | 26.1 | 89.1 | 29.5 | 2.4 | 65.1 | 22.7 | 70.4 | 30.2 | 5.3 | 58.6 | 27.7 | 56.8 | 29.8 | -1.8 |
| Mean Severity Level (Mild = 1, Profound = 4) | | 1.6 | | | | | 2.0 | | | | | 2.6 | | | |
| Mean Chronological Age at Post-Test (in Months) | | | | 59.7 | | | | | 54.2 | | | | | 57.1 | |

*Mean developmental age scores (in months).

- a. Too few cases to establish significance
- b. Significant at the .1 level
- c. Significant at the .05 level
- d. Significant at the .01 level

## TABLE 4.19

## MEAN ALPERN-BOLL SCORES AND STANDARD DEVIATIONS BY PROGRAM TYPE FOR THE MENTALLY RETARDED

| Developmental Scale | HEAD START (N=49) | | | | | NON-HEAD START (N=130) | | | | | NONSERVED (N=21) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PRETEST | | POSTTEST | | | PRETEST | | POSTTEST | | | PRETEST | | POSTTEST | | |
| | Mean Score* | Standard Deviation | Mean Score | Standard Deviation | Mean Change | Mean Score | Standard Deviation | Mean Score | Standard Deviation | Mean Change | Mean Score | Standard Deviation | Mean Score | Standard Deviation | Mean Change |
| Physical Age | 47.3 | 24.1 | 52.3 | 22.2 | 5.0b | 32.5 | 17.6 | 34.1 | 17.0 | 1.6 | 24.8 | 11.2 | 28.9 | 12.5 | 4.1b |
| Self-Help Age | 52.9 | 21.9 | 60.3 | 23.2 | 7.4d | 37.2 | 20.9 | 40.4 | 22.0 | 3.2d | 23.5 | 9.6 | 28.1 | 12.0 | 4.6d |
| Social Age | 47.8 | 19.7 | 53.4 | 20.4 | 5.6c | 36.7 | 17.7 | 37.4 | 18.3 | 0.7 | 25.5 | 9.0 | 28.2 | 10.1 | 2.7b |
| Academic Age | 38.7 | 16.1 | 45.6 | 17.8 | 6.9d | 28.6 | 14.7 | 32.0 | 16.2 | 3.4d | 23.5 | 6.9 | 25.2 | 8.6 | 1.7 |
| Communication Age | 35.7 | 16.9 | 42.4 | 18.9 | 6.7d | 26.4 | 15.9 | 30.7 | 16.5 | 4.3d | 19.6 | 8.2 | 23.5 | 8.7 | 3.9d |
| IQ Equivalency | 63.7 | 23.9 | 70.8 | 24.0 | 7.1d | 53.4 | 23.7 | 53.8 | 24.6 | 0.4 | 48.3 | 15.3 | 46.3 | 17.8 | -2.0 |
| Mean Severity Level (Mild = 1, Profound = 4) | 2.1 | | | | | 2.3 | | | | | 2.8 | | | | |
| Mean Chronological Age at Post Test (in Months) | | | 64.9 | | | | | 61.6 | | | | | 62.5 | | |

*Mean developmental age scores (in months).

a. Too few cases to establish significance
b. Significant at the .1 level
c. Significant at the .05 level
d. Significant at the .01 level

Pre and posttest standard deviations for all three groups are unusually close. The non-served group, however, shows considerably less variation (8 or 9 points lower) probably attributable to the relatively small sample size (N=21) and the high severity level rating resulting in restricted variability ranges.

Specific Learning Disability: Table 4.20 presents the developmental scores for the Head Start (N=27), non-Head Start (N=24), and the non-served groups (N=2). As with previous handicapping categories the Head Start sample shows the largest and most consistent gains (3.7 to 8.5 months) while the non-Head Start group shows only moderate gains (1.8 to 2.3 months). The sample size for the non-served group (N=2) is too small to allow any comparisons or analysis to be made with this group. The Head Start and non-Head Start groups both show comparable severity levels and ages although there are still notable pretest differences in some developmental ages. For example, Self Help pretest ages are 69.6 months for Head Start and 64.7 months for non-Head Start for a 4.8 month difference.

The standard deviations for both the Head Start and non-Head Start groups are reasonably close for all subscales with the exception of the pretest standard deviations on the Self Help scale (Head Start = 14.6 and non-Head Start = 23.2). However, posttest standard deviations are very comparable (15.9 and 15.8, respectively) and it is doubtful that the difference in pretest variation will adversely affect statistical adjustments for analysis. The non-served group will not be used in analysis.

Seriously Emotionally Disturbed: This final category of handicapping conditions (Table 4.21) contains 30 Head Start and 33 non-Head Start. The small sample of only 3 non-served is not sufficient to allow for any comparative analysis of the first two groups with the non-served group. The Head Start group again shows large and consistent gains (2.9 to 12.0 months) which is almost matched by the non-Head Start group (2.9 to 7.5 months). While severity level ratings are comparable (1.9 compared with 1.6) the Head Start group is younger (59.5 months compared with 65.7 months for the non-Head Start group).

## TABLE 4.20

## MEAN ALPERN-BOLL SCORES AND STANDARD DEVIATIONS BY PROGRAM TYPE FOR SPECIFIC LEARNING DISABILITY

| Developmental Scale | HEAD START (N=27) | | | | | NOT HEAD START (N=24) | | | | | NONSERVED (N=2) a | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PRETEST | | POSTTEST | | | PRETEST | | POSTTEST | | | PRETEST | | POSTTEST | | |
| | Mean Score * | Standard Deviation | Mean Score | Standard Deviation | Mean Change | Mean Score | Standard Deviation | Mean Score | Standard Deviation | Mean Change | Mean Score | Standard Deviation | Mean Score | Standard Deviation | Mean Change |
| Physical Age | 63.9 | 20.7 | 71.1 | 20.3 | 7.2b | 61.9 | 26.2 | 61.9 | 18.2 | 0.0 | 48.0 | 11.3 | 58.0 | 14.1 | 10.0 |
| Self Help Age | 69.6 | 14.6 | 73.3 | 15.9 | 3.7 | 64.7 | 23.2 | 67.0 | 15.8 | 2.3 | 50.0 | 11.3 | 73.0 | 26.9 | 23.0 |
| Social Age | 63.5 | 15.0 | 68.3 | 14.4 | 4.8 | 59.5 | 18.9 | 62.0 | 17.9 | 2.5 | 41.0 | 1.4 | 59.0 | 21.2 | 18.0 |
| Academic Age | 55.1 | 12.8 | 63.6 | 12.2 | 8.5d | 54.3 | 17.7 | 57.0 | 13.6 | 2.7 | 33.0 | 1.4 | 38.5 | 0.7 | 5.5 |
| Communication Age | 53.8 | 14.3 | 61.8 | 17.0 | 8.0d | 52.1 | 20.4 | 53.9 | 14.7 | 1.8 | 38.0 | 5.7 | 40.0 | 2.8 | 2.0 |
| IQ Equivalency | 89.8 | 20.4 | 95.6 | 18.0 | 5.8 | 84.2 | 21.1 | 82.2 | 16.5 | -2.0 | 75.0 | 1.4 | 77.0 | 2.8 | 2.0 |
| Mean Severity Level (Mild = 1, Profound = 4) | | 1.5 | | | | | 1.4 | | | | | 1.5 | | | |
| Mean Chronological Age at Post-Test (in Months) | | | | 67.2 | | | | | 69.4 | | | | | 51.5 | |

*Mean developmental age scores (in months).

a. Too few cases to establish significance
b. Significant at the .1 level
c. Significant at the .05 level
d. Significant at the .01 level

## TABLE 4.21

## MEAN ALPERN-BOLL SCORES AND STANDARD DEVIATIONS BY PROGRAM TYPE FOR THE SERIOUSLY EMOTIONALLY DISTURBED

| Developmental Scale | HEAD START (N=30) | | | | | NON-HEAD START (N=33) | | | | | NONSERVED (N=3) a | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PRETEST | | POSTTEST | | | PRETEST | | POSTTEST | | | PRETEST | | POSTTEST | | |
| | Mean Score * | Standard Deviation | Mean Score | Standard Deviation | Mean Change | Mean Score | Standard Deviation | Mean Score | Standard Deviation | Mean Change | Mean Score | Standard Deviation | Mean Score | Standard Deviation | Mean Change |
| Physical Age | 50.7 | 18.2 | 62.7 | 16.5 | 12.0d | 52.9 | 19.2 | 60.4 | 24.7 | 7.5b | 47.3 | 2.3 | 68.7 | 8.1 | 21.4 |
| Self Help Age | 64.4 | 18.4 | 67.3 | 16.6 | 2.9 | 57.3 | 20.9 | 62.8 | 21.7 | 5.5 | 47.3 | 11.0 | 80.0 | 8.7 | 32.7 |
| Social Age | 50.7 | 18.9 | 57.0 | 14.3 | 6.3b | 52.4 | 20.4 | 56.6 | 22.2 | 4.2 | 49.3 | 4.6 | 68.0 | 11.1 | 18.7 |
| Academic Age | 43.8 | 15.2 | 52.3 | 15.6 | 8.5d | 47.0 | 17.0 | 50.7 | 18.7 | 3.7 | 49.3 | 6.4 | 56.7 | 18.6 | 7.4 |
| Communication Age | 46.0 | 18.9 | 51.6 | 19.0 | 5.6c | 49.4 | 18.4 | 52.3 | 21.4 | 2.9 | 55.3 | 11.7 | 63.3 | 19.2 | 8.0 |
| IQ Equivalency | 82.4 | 26.3 | 88.4 | 25.2 | 6.0 | 79.8 | 25.0 | 77.4 | 27.6 | -2.4 | 100.3 | 25.6 | 101.0 | 34.6 | 0.7 |
| Mean Severity Level (Mild = 1, Profound = 4) | 1.9 | | | | | 1.6 | | | | | 1.0 | | | | |
| Mean Chronological Age at Post-Test (In Months) | 59.5 | | | | | 65.7 | | | | | 69.3 | | | | |

*Mean developmental age scores (in months).

a. Too few cases to establish significance
b. Significant at the .1 level
c Significant at the .05 level
d. Significant at the .01 level

The measure of variation (standard variation) is very close for pretest and posttest and across both groups. This will enable statistical adjustments for between group comparisons.

Summary of Developmental Age Scores for Each Handicapping Condition: Variance across groups and from pretest to posttest (as measured by the standard deviation) is critical in conducting comparative analyses of differences when a number of statistical adjustments are necessary (for example, age, severity level, etc.). For most categories of handicapping condition the measure of variance shows good comparability from pretest to posttest for all subscales and across the three program groups. The physically handicapped, speech impaired, health or developmentally impaired, and mentally retarded show the best consistency of variance for comparison purposes across all three program groups. The specific learning disability and seriously emotionally disturbed groups have good variance measures between the Head Start and non-Head Start groups only. The non-served sample for each of these two latter categories is too small to produce stable measures. The four low incidence handicaps (blind, visually impaired, deaf, and hearing impaired) each have such small sample sizes that no handicap specific analysis can be conducted. Aggregating these four categories into a single "other" category improves pre-post variances for the Head Start and non-Head Start groups a sufficient amount to enable comparisons between groups. While the variances of the non-served group are comparable pre-post and across both other groups, the small-sample size (N=5) does not permit their inclusion in analyses.

Developmental Age Scores by Severity Level: Tables 4.22 through 4.26 present the developmental age scores across each program by severity level. As discussed in Technical Memorandum No. 1 (Appendix A) mean developmental scores drop evenly across all programs as the severity level increases. While the mean developmental ages decrease by severity, the measure of variance (standard deviation) remains relatively constant across severity levels, pre-post, and across programs. The only notable exception to this is the unusually low standard deviations (pre and post) for the non-served group in the

## TABLE 4.22

## MEAN ALPERN-BOLL SCORES AND STANDARD DEVIATIONS BY PROGRAM TYPE FOR THE MILD SEVERITY LEVEL

| Developmental Scale | HEAD START (N=163) | | | | | NON-HEAD START (N=82) | | | | | NONSERVED (N=48) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PRETEST | | POSTTEST | | | PRETEST | | POSTTEST | | | PRETEST | | POSTTEST | | |
| | Mean Score* | Standard Deviation | Mean Score | Standard Deviation | Mean Change | Mean Score | Standard Deviation | Mean Score | Standard Deviation | Mean Change | Mean Score | Standard Deviation | Mean Score | Standard Deviation | Mean Change |
| Physical Age | 63.0 | 20.5 | 68.9 | 19.6 | 5.9d | 52.5 | 19.5 | 56.8 | 19.1 | 4.3c | 48.8 | 15.8 | 54.4 | 18.5 | 5.6d |
| Self-Help Age | 70.6 | 17.4 | 76.1 | 15.6 | 5.5a | 57.6 | 19.1 | 63.6 | 18.6 | 5.9d | 52.2 | 16.7 | 62.4 | 18.5 | 10.2d |
| Social Age | 64.0 | 15.2 | 68.5 | 15.0 | 4.5d | 54.7 | 16.8 | 58.6 | 17.3 | 3.9c | 50.0 | 13.5 | 55.3 | 16.5 | 5.3d |
| Academic Age | 53.1 | 13.3 | 61.3 | 13.3 | 8.2d | 47.0 | 15.3 | 54.1 | 15.4 | 7.1d | 43.7 | 11.9 | 49.6 | 13.4 | 5.9d |
| Communication Age | 52.2 | 14.3 | 59.5 | 15.4 | 7.3d | 45.2 | 17.3 | 51.6 | 16.9 | 4.6d | 43.5 | 13.9 | 51.2 | 16.0 | 7.7d |
| IQ Equivalency | 94.2 | 20.9 | 98.3 | 19.5 | 4.1d | 85.7 | 22.5 | 90.3 | 23.5 | 4.6b | 99.7 | 19.0 | 97.0 | 19.0 | -2.7 |
| Mean Chronological age at posttest | 63.1 | | | | | 64.4 | | | | | 58.3 | | | | |

*Mean developmental age scores (in months).

a. Too few cases to establish significance
b. Significant at the .1 level
c. Significant at the .05 level
d. Significant at the .01 level

## TABLE 4.23

## MEAN ALPERN-BOLL SCORES AND STANDARD DEVIATIONS BY PROGRAM TYPE FOR THE MODERATE SEVERITY LEVEL

| Developmental Scale | HEAD START (N=152) | | | | | NON-HEAD START (N=136) | | | | | NONSERVED (N=33) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PRETEST | | POSTTEST | | | PRETEST | | POSTTEST | | | PRETEST | | POSTTEST | | |
| | Mean Score* | Standard Deviation | Mean Score | Standard Deviation | Mean Change | Mean Score | Standard Deviation | Mean Score | Standard Deviation | Mean Change | Mean Score | Standard Deviation | Mean Score | Standard Deviation | Mean Change |
| Physical Age | 50.0 | 19.6 | 58.6 | 19.3 | 8.6d | 40.9 | 19.4 | 44.5 | 20.6 | 3.6 d | 36.3 | 15.5 | 40.0 | 21.5 | 3.7 |
| Self-Help Age | 58.8 | 17.3 | 66.9 | 17.8 | 8.1d | 47.1 | 21.4 | 52.5 | 21.8 | 5.4 d | 40.4 | 17.5 | 45.6 | 21.5 | 5.2c |
| Social Age | 53.9 | 15.2 | 61.7 | 17.3 | 7.8d | 46.8 | 16.7 | 51.0 | 18.7 | 4.2 d | 34.7 | 11.5 | 41.8 | 15.7 | 7.1d |
| Academic Age | 44.7 | 14.0 | 53.0 | 15.1 | 8.3d | 38.4 | 15.8 | 43.7 | 17.0 | 5.3 d | 32.3 | 10.6 | 36.6 | 12.1 | 4.3c |
| Communication Age | 43.2 | 15.0 | 52.8 | 18.4 | 9.6d | 36.6 | 17.3 | 41.7 | 17.4 | 5.1 d | 29.3 | 10.9 | 33.6 | 12.3 | 4.3c |
| IQ Equivalency | 81.7 | 2.0 | 87.0 | 1.8 | 5.3 | 69.2 | 2.0 | 71.0 | 1.9 | 1.8 | 70.9 | 20.3 | 70.7 | 18.6 | -.2 |
| Mean chronological age at posttest | 65.6 | | | | | 66.1 | | | | | 57.[illegible] | | | | |

*Mean developmental age scores (in months).

a. Too few cases to establish significance
b. Significant at the .1 level
c. Significant at the .05 level
d. Significant at the .01 level

## TABLE 4.24

## MEAN ALPERN-BOLL SCORES AND STANDARD DEVIATIONS BY PROGRAM TYPE FOR THE SEVERE SEVERITY LEVEL

| | HEAD START (N=63) | | | | | NON-HEAD START (N=74) | | | | | NONSERVED (N=23) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PRETEST | | POSTTEST | | | PRETEST | | POSTTEST | | | PRETEST | | POSTTEST | | |
| Developmental Scale | Mean Score* | Standard Deviation | Mean Score | Standard Deviation | Mean Change | Mean Score | Standard Deviation | Mean Score | Standard Deviation | Mean Change | Mean Score | Standard Deviation | Mean Score | Standard Deviation | Mean Change |
| Physical Age | 42.3 | 20.3 | 46.0 | 22.1 | 3.7c | 27.5 | 20.0 | 30.0 | 19.5 | 2.5c | 26.1 | 14.6 | 30.9 | 16.1 | 4.8d |
| Self-Help Age | 49.1 | 20.8 | 57.1 | 22.5 | 8.0d | 33.4 | 22.0 | 36.3 | 22.5 | 2.9c | 29.8 | 18.4 | 34.8 | 19.4 | 4.9d |
| Social Age | 45.1 | 17.7 | 50.7 | 18.2 | 5.6d | 35.3 | 17.8 | 35.8 | 18.5 | 0.5 | 30.0 | 12.7 | 32.7 | 15.9 | 2.7 |
| Academic Age | 38.8 | 14.7 | 44.2 | 17.9 | 5.4d | 29.3 | 16.1 | 32.8 | 18.3 | 3.5d | 25.2 | 7.3 | 27.1 | 8.7 | 1.9 b |
| Communication Age | 36.0 | 16.7 | 42.2 | 20.1 | 6.2d | 29.0 | 17.7 | 31.1 | 19.5 | 2.1b | 23.8 | 10.0 | 27.1 | 12.3 | 3.3 c |
| IQ Equivalency | 70.5 | 26.1 | 72.4 | 29.3 | 1.9 | 60.6 | 33.0 | 61.1 | 34.4 | 1.5 | 48.6 | 16.4 | 48.5 | 18.9 | 0.1 |
| Mean Chronological age at posttest | 57.4 | | | | | 59.6 | | | | | 56.4 | | | | |

*Mean developmental age scores (in months).

a. Too few cases to establish significance
b. Significant at the .1 level
c. Significant at the .05 level
d. Significant at the .01 level

## TABLE 4.25

## MEAN ALPERN-BOLL SCORES AND STANDARD DEVIATIONS BY PROGRAM TYPE FOR THE PROFOUND SEVERITY LEVEL

| | HEAD START (N=13) | | | | | NON-HEAD START (N=29) | | | | | NONSERVED (N=14) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PRETEST | | POSTTEST | | | PRETEST | | POSTTEST | | | PRETEST | | POSTTEST | | |
| Developmental Scale | Mean Score* | Standard Deviation | Mean Score | Standard Deviation | Mean Change | Mean Score | Standard Deviation | Mean Score | Standard Deviation | Mean Change | Mean Score | Standard Deviation | Mean Score | Standard Deviation | Mean Change |
| Physical Age | 46.5 | 22.3 | 59.5 | 29.7 | 13.1 | 15.5 | 20.9 | 16.3 | 23.5 | 0.8 | 16.0 | 3.3 | 15.8 | 3.0 | -0.02 |
| Self-Help Age | 48.8 | 21.4 | 64.0 | 24.2 | 15.2d | 17.8 | 18.6 | 21.9 | 27.0 | 4.2b | 16.2 | 9.9 | 17.3 | 12.3 | 1.2 |
| Social Age | 45.3 | 17.3 | 61.5 | 22.1 | 16.2d | 22.8 | 18.5 | 26.4 | 25.4 | 3.7b | 17.6 | 7.2 | 17.6 | 9.3 | * |
| Academic Age | 39.3 | 14.6 | 48.9 | 21.1 | 9.6c | 21.9 | 18.8 | 24.2 | 24.9 | 2.3 | 16.8 | 5.9 | 18.0 | 7.4 | 1.2 |
| Communication Age | 33.5 | 21.[illegible] | 38.9 | 22.9 | 5.4 | 19.4 | 18.9 | 21.6 | 23.4 | 2.1 | 13.1 | 5.8 | 15.1 | 5.9 | 2.0 |
| IQ Equivalency | 66.8 | 8.9 | 78.5 | 10.8 | 11.7 | 42.3 | 27.1 | 42.4 | 39.2 | 0.1 | 38.2 | 14.9 | 36.0 | 17.0 | -2.2 |
| Mean Chronological age at posttest | 50.2 | | | | | 52.3 | | | | | 42.6 | | | | |

*Mean developmental age scores (in months).

a. Too few cases to establish significance
b. Significant at the .1 level
c. Significant at the .05 level
d. Significant at the .01 level

## TABLE 4.26

## SIGNIFICANT CHANGES[1] IN MEAN ALPERN-BOLL SCORES BY SEVERITY LEVEL

| Developmental Scale / Severity Level | Physical Age | Self-Help Age | Social Age | Academic Age | Communication Age | I.Q. Equivalency |
|---|---|---|---|---|---|---|
| **Mild** | | | | | | |
| Head Start | + | + | + | + | + | + |
| Non-Head Start | 0 | + | 0 | + | + | 0 |
| Non-Served | + | + | + | + | + | 0 |
| **Moderate** | | | | | | |
| Head Start | + | + | + | + | + | + |
| Non-Head Start | + | + | + | + | + | 0 |
| Non-Served | 0 | 0 | + | 0 | 0 | 0 |
| **Severe** | | | | | | |
| Head Start | 0 | + | + | + | + | 0 |
| Non-Head Start | 0 | 0 | 0 | + | 0 | 0 |
| Non-Served | + | + | 0 | 0 | 0 | 0 |
| **Profound** | | | | | | |
| Head Start | 0 | + | + | 0 | 0 | 0 |
| Non-Head Start | 0 | 0 | 0 | 0 | 0 | 0 |
| Non-Served | 0 | 0 | 0 | 0 | 0 | 0 |

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[1] (+) = positive change significant at the .01 level; (-) = negative change significant at the .01 level; (0) = no significant change.

"profound" severity level, which can be attributed to the small sample size (N=14). Mean changes are very small (from -0.02 to 2.0 months) and the standard deviations are consistent from pretest to posttest so it is doubtful that this small sample will adversely affect statistical adjustments by severity level.

Although there is strong reason to believe that the severity level ratings are reasonably accurate (see the discussion on severity level ratings in Chapter 3), Tables 4.22 through 4.25 show that mean Head Start developmental age scores are consistently higher than either non-Head Start or non-served by 8 to 12 months for each subscale. Table 4.26 shows developmental age subscales where significant pre-post changes occurred. This existing pretest difference may be due to an older sample of children in Head Start, to inaccuracies in severity level ratings, or to disproportionate representation by handicapping condition. Fortunately, the stability of the variance measures across these variables should allow for statistical adjustment.

### *CLASSROOM SOCIAL SKILLS*

The California Preschool Social Competency Scale is designed for use in evaluating the classroom social skills of preschool children aged 2 years to 6 years through teacher ratings of the child on a 30 item scale. Each item contains descriptive statements which represent varying degrees of skills relative to the behavior being measured by that item. The teacher completes each item based on observations of actual performance rather than inferences or presumed ability. In addition, norms are provided from which percentile scores can be derived which adjust for sex, chronological age, and occupational level of the parents (low vs. high). The mean percentile scores and standard deviations for the Head Start and non-Head Start samples are presented in Table 4.27A by handicapping condition and in Table 4.28A by severity level. Since the percentile scores derived from the norms table adjust for the six month age interval from pre to post, there should be essentially no pre-test change, assuming there is no treatment effect. Those children who manifested no gain

# TABLE 4.27A

## MEAN PERCENTILE SCORES ON THE CALIFORNIA PRESCHOOL SOCIAL COMPETENCY SCALE BY PROGRAM TYPE FOR ALL HANDICAPPING CONDITIONS

| PROGRAM TYPE / HANDICAPPING CONDITION | HEAD START MEAN PERCENTILE | | | | | NON-HEAD START MEAN PERCENTILE | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | PRE TEST | | POST TEST | | | PRE TEST | | POST TEST | | |
| | MEAN | STANDARD DEVIATION | MEAN | STANDARD DEVIATION | MEAN CHANGE | MEAN | STANDARD DEVIATION | MEAN | STANDARD DEVIATION | MEAN CHANGE |
| Total | 32.4 | 29.2<br>(N=391) | 38.5 | 30.3 | 6.2d | 23.0 | 25.9<br>(N=316) | 28.1 | 30.6 | 5.1d |
| Other (1-4)1/ | 37.5 | 30.9<br>(N=39) | 43.4 | 38.9 | 5.9 | 44.6 | 25.5<br>(N=16) | 40.6 | 32.2 | -4.0 |
| Visually Impaired | 44.3 | 29.3<br>(N=18) | 45.6 | 30.8 | 1.3 | 36.0 | *<br>(N=1) | 55.0 | * | 19.0a |
| Blind | 32.0 | *<br>(N=1) | 59.0 | * | 27.0a | 6.5 | 7.8<br>(N=2) | 1.0 | 1.4 | -5.5a |
| Hearing Impaired | 37.3 | 35.4<br>(N=15) | 45.9 | 38.6 | 8.5 | 51.2 | 21.7<br>(N=11) | 46.8 | 29.5 | -4.3 |
| Deaf | 14.4 | 11.6<br>(N=5) | 24.8 | 22.3 | 10.4a | 51.0 | 38.2<br>(N=2) | 39.0 | 55.2 | -12.0a |
| Physically Handicapped | 46.2 | 32.7<br>(N=71) | 46.6 | 30.8 | 0.3 | 32.8 | 31.2<br>(N=55) | 40.0 | 35.8 | 7.2d |
| Speech Impaired | 35.2 | 26.3<br>(N=115) | 44.1 | 28.6 | 8.9d | 33.0 | 27.7<br>(N=52) | 37.2 | 31.2 | 4.2c |
| Health or Developmentally Impaired | 30.8 | 27.7<br>(N=66) | 38.8 | 31.1 | 7.9d | 17.1 | 20.8<br>(N=30) | 24.8 | 30.4 | 7.6d |
| Mentally Retarded | 19.8 | 27.0<br>(N=46) | 21.6 | 27.0 | 1.8 | 12.7 | 18.0<br>(N=115) | 17.5 | 24.9 | 4.7 |
| Specific Learning Disability | 20.9 | 21.6<br>(N=27) | 31.9 | 22.8 | 11.0c | 36.0 | 28.7<br>(N=21) | 38.6 | 27.0 | 2.6 |
| Seriously Emotionally Disturbed | 13.2 | 19.6<br>(N=26) | 21.9 | 25.3 | 8.7c | 11.5 | 16.5<br>(N=27) | 19.8 | 25.3 | 6.3b |

1/ The category "other" includes blind, visually impaired, deaf, and hearing impaired.

a. Too few cases to establish significance
b. Significant at the .1 level
c. Significant at the .05 level
d. Significant at the .01 level

in raw score earn a deficit percentile score (2 to 4 percentile), and those children gaining a minimum of four or five raw score points earn the pretest percentile score. Therefore, gains evident from pre to post can generally be construed as effects beyond expected maturation.

As Table 4.27A shows, both the Head Start and non-Head Start programs show gains in percentile scores for the sample as a whole (6.2 and 5.1, respectively). This suggests that these fairly substantial percentile gains may be treatment effects. With the exception of the four low incidence handicapping conditions (blind, visually impaired, deaf, and hearing impaired) all six of the other handicapping conditions show evidence of identifiable percentile gains. Table 4.27B presents a summary of statistically significant changes in percentile gains for the Head Start and non-Head Start samples.

However, Table 4.27A shows that these gains are not consistent across handicapping condition and program type. For example, while the Head Start physically handicapped sample only showed a gain of 0.3 percentiles, the non-Head Start showed a gain of 7.2 percentiles. Similarly, the Head Start learning disabled showed a gain of 11.0 percentiles while the non-Head Start sample only gained 2.6 percentiles. To the extent that these demonstrated gains are reflective of treatment effects of the programs, then there are some obvious differential effects of programs by certain handicapping conditions. This pattern of percentile gains required that all analyses be conducted specific to handicapping condition and not aggregated across handicaps.

Examination of pretest and posttest standard deviations shows further evidence of non-comparability across handicapping conditions. While Head Start standard deviations are fairly comparable from pretest to posttest for each handicapping condition (the largest pre-post difference in standard deviations is 5.7 for the emotionally disturbed) there are large differences in this measure of variability across handicaps. For example, the pretest standard deviation for the physically handicapped is 32.7 and for the emotionally disturbed

## TABLE 4.27B

## SIGNIFICANT CHANGES[1] IN MEAN PERCENTILE ON THE CALIFORNIA PRESCHOOL SOCIAL COMPETENCY SCALE FOR ALL HANDICAPPING CONDITIONS

| Program Type<br>Handicapping Condition | HEAD START | NON-HEAD START |
|---|---|---|
| Total | + | + |
| Other[3] | 0 | 0 |
| Visually Impaired | 0 | 0[2] |
| Blind | 0[2] | 0[2] |
| Hearing Impaired | 0 | 0 |
| Deaf | 0[2] | 0[2] |
| Physically Handicapped | 0 | + |
| Speech Impaired | + | + |
| Health or Developmentally Impaired | + | 0 |
| Mentally Retarded | 0 | + |
| Learning Disability | + | 0 |
| Emotionally Disturbed | + | + |

[1] (+) = positive change significant at least at the .01 level;
(-) = negative change significant at the .01 level;
(0) = no significant change.

[2] Too few cases to establish significance.

[3] The category "other" includes blind, visually impaired, deaf and hearing impaired.

it is 19.6 - a difference of 13.1, which is more than twice the difference from pretest to posttest. Similar differences, though more pronounced, are present in the non-Head Start sample. The largest difference for this group also occurs on the pretest standard deviations for physically handicapped ($\sigma$=31.2) and emotionally disturbed ($\sigma$= 16.5) - a difference of 14.7. Such large differences across handicapping conditions in this measure of variability (standard deviation) underscores the necessity of conducting analyses on the California Preschool Social Competency Scale specific to each handicap.

The four low incidence handicapping conditions (blind, visually impaired, deaf, and hearing impaired) show especially large differences in pre-post standard deviations as well as across handicaps. Table 4.27A shows that aggregating these four categories into a single "other" category dramatically improves the pre-post differences in standard deviations (not shown in the table but calculated as 9.0 for Head Start and 6.7 for non-Head Start) but does little to reduce the large differences across the remaining six handicapping conditions, strengthening the need to conduct handicap specific analyses treating the "other" category as one analysis category.

Table 4.28A presents mean scores and standard deviations for the California Preschool Social Competency Scale by severity level. Table 4.28B presents a summary of significant pre-post changes. Assuming that severity level is an indicator of relative developmental rate, then "mild" handicaps should show greater gains (or at the least less loss) than more "severe" handicaps. Presumably the profoundly handicapped child will achieve relatively small, if any, gains compared with only mildly handicapped children. The mean changes shown in Table 4.28A illustrate that the non-Head Start sample progressively gains less for each increment in severity level ("mild" gains = 9.5, "moderate" gains = 4.1, "severe" gains = 3.9, and "profound" gains = 1.4). As illustrated in Table 4.28A, however, the Head Start sample

## TABLE 4.28A

## MEAN PERCENTILE SCORES ON THE CALIFORNIA PRESCHOOL SOCIAL COMPETENCY SCALE BY PROGRAM TYPE FOR ALL SEVERITY LEVELS

| PROGRAM TYPE / SEVERITY LEVEL | HEAD START MEAN PERCENTILE | | | | | NON-HEAD START MEAN PERCENTILE | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | PRE TEST | | POST TEST | | | PRE TEST | | POST TEST | | |
| | MEAN | STANDARD DEVIATION | MEAN | STANDARD DEVIATION | MEAN CHANGE | MEAN | STANDARD DEVIATION | MEAN | STANDARD DEVIATION | MEAN CHANGE |
| Mild | 39.7 | 29.5 | 46.2 | 28.3 | 6.6d | 32.2 | 26.7 | 41.7 | 31.2 | 9.5d |
| | | (N=163) | | | | | (N=83) | | | |
| Moderate | 30.2 | 27.9 | 36.4 | 30.7 | 6.2d | 22.3 | 24.5 | 26.4 | 29.0 | 4.1d |
| | | (N=152) | | | | | (N=136) | | | |
| Severe | 21.1 | 27.4 | 25.1 | 28.5 | 4.0 | 16.4 | 24.8 | 20.2 | 28.9 | 3.9[illegible] |
| | | (N=63) | | | | | (N=74) | | | |
| Profound | 20.6 | 24.4 | 31.4 | 33.6 | 10.8 | 15.5 | 27.0 | 14.1 | 27.3 | -1.4 |
| | | (N=13) | | | | | (N=23) | | | |

a. Too few cases to establish significance
b. Significant at the .1 level
c. Significant at the .05 level
d. Significant at the .01 level

## TABLE 4.28B

## SIGNIFICANT CHANGES[1] IN MEAN PERCENTILES ON THE CALIFORNIA PRESCHOOL SOCIAL COMPETENCY SCALE FOR ALL SEVERITY LEVELS

| Program<br>Severity Level | HEAD START | NON-HEAD START |
|---|---|---|
| Mild | + | + |
| Moderate | + | + |
| Severe | 0 | + |
| Profound | 0 | 0 |

---

[1] (+) = positive change significant at the .01 level;
(-) = negative change significant at the .01 level;
(0) = no significant change.

shows this progressive reduction only for the first three severity levels ("mild" gains = 6.6, "moderate" gains = 6.2, "severe" gains = 4.0) and shows a sudden large gain for the profound severity level (gain = 10.8). This is better illustrated in Figure 4.1.

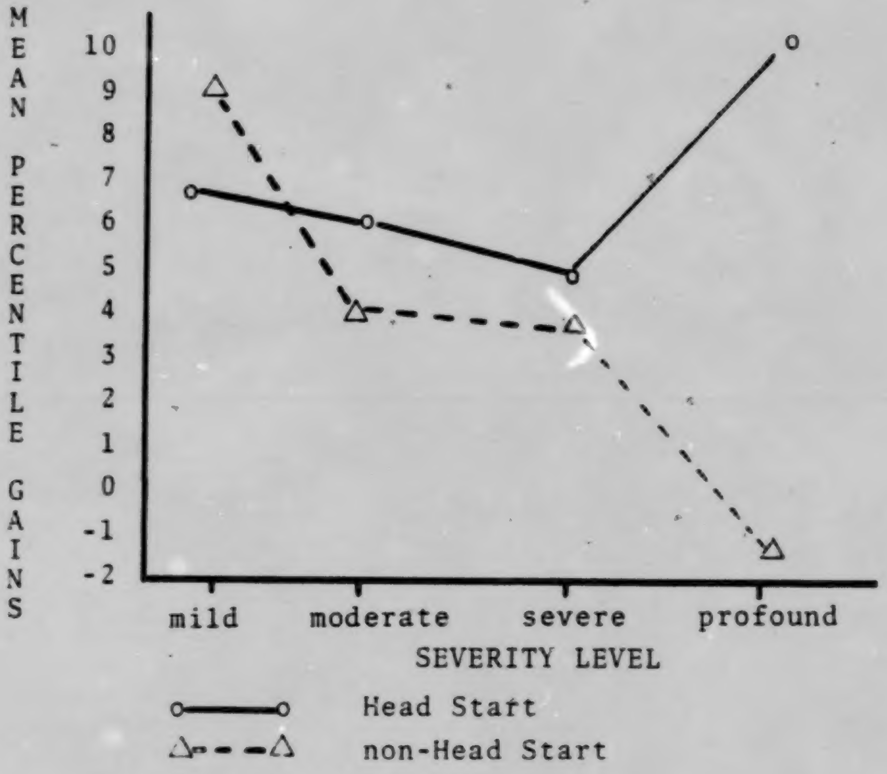

FIGURE 4.1 : MEAN GAINS BY SEVERITY LEVELS FOR HEAD START AND NON-HEAD START SAMPLES

There are three possible explanations for this substantial difference in gains for the profound severity level between Head Start and non-Head Start: unstable means in the Head Start sample because of the small sample size (N=13); incorrect rating of severity level for these few cases; and rather dramatic program effects attributable to initial enrollment. The first of these three possible explanations appears to be the most plausible. The differences in pre-post standard deviations shown in Table 4.28A are generally very small (2 to 3 points) for all groups except the Head Start profound severity level where the difference in pre and post standard deviations is three times the other groups (9.2). The other two possible explanations, however, are not totally untenable. While severity ratings correlated well with developmental ages (Table 3.1) and there is good evidence of the validity of the field staff ratings it is possible that a few "severe" cases were incorrectly rated as "profound". Further, for those handicapped children who were enrolled in Head Start after several years of No Program experience, it is not unlikely to experience dramatic initial program effects which plateau off after a year or two.

Regardless of the source of these large gains, they occur in a small sample (N=13) which is not likely to adversely effect analyses. Overall, the California Preschool Social Competency Scale appears to accurately reflect severity level.

## SUMMARY

Posttest attrition was limited to only 106 of the 936 pretest sample cases and occurred proportionately for all three study groups. Both the Head Start and non-Head Start groups retained sample sizes which were proportionate from pretest to posttest, over all ten handicapping conditions. However, serious variations in sample size were shown by handicapping condition.

- Handicapping conditions are not equally represented either in the overall sample or across the three identified study groups. Analyses must be handicap specific.
- The milder severity levels of handicaps are represented at a considerably higher rate than the more severe handicapped; severity must be adjusted for in-between groups analyses and for analyses comparing handicapping conditions.
- Boys are overrepresented in the study sample as a whole and two handicap conditions show possible evidence of sex bias (emotionally disturbed and speech impaired).
- Children with experience in a previous program are relatively infrequent and those with prior program experience tend to have had short-term enrollments.
- The physically handicapped, speech impaired, health or developmentally impaired, and mentally retarded show the best consistency of variance for comparison purposes across all three program groups. The four low incidence handicap categories (deaf, hearing impaired, blind, and visually impaired) should be aggregated into a single "other" category for between group comparisons.
- There is strong reason to believe that the severity level ratings are reasonably accurate, and that the consistently higher mean Head Start developmental age scores are valid. This existing pretest difference may be due to an older sample of children in Head Start, to inaccuracies in severity level ratings, or to disproportionate representation by handicapping condition. Statistical adjustment for these pretest differences will be required for between group comparisons.
- The California Preschool Social Competency Scale provides a percentile based measure of classroom social skills which is adjusted for sex, age, and occupational level of parents but which shows specific differential program effects across handicapping condition and for severity level. The effects of severity level should be adjusted out and analysis efforts for program effects should be handicap specific.

# 5

# FAMILY BACKGROUND VARIABLES

## Background

Many elements of a child's environment contribute to physical, emotional, social, and cognitive growth. Child development theorists differ on the importance of these various elements, but there is general agreement that characteristics of the family are among the most important. Characteristics of the family include certain demographic elements (such as the occupational status of family members), as well as the personal values and attitudes which govern family interactions. Information of this nature was collected on each child participating in the study.

The general analysis model (see Chapter 2) assumes certain causal relationships among the specified variable groups. Family characteristics are assumed to affect the attitudes and values of the parents and the developmental progress of the child both directly and indirectly. For example, families with certain common characteristics, such as occupational status, may have similar attitudes toward programs and services. If their attitudes are extremely positive they might be expected to value and support the efforts of the programs and to exercise more control on the "progress" of their child. In this way, some family characteristics are expected to contribute to the progress of a child through any given program.

Because of the large number of variables representing family characteristics, it is necessary to determine the most likely variables for inclusion in the analysis model. The criterion for selection of these variables involves two considerations:

- those variables which appear to have the greatest effect on child progress;
- those variables which appear to differentiate between some key groups identified in the study (such as type of program the child is enrolled in or handicapping condition).

## Demographic Characteristics of the Family

Four specific demographic variables were identified in the Interim Technical Report which could differentially affect child growth and development: family income, occupational status, level of education, and the presence of other children in the family.

### *FAMILY INCOME*

Table 5.1 shows the distribution of family income by type of program. These data were not reported for approximately 19 percent of each program, but for these reporting family income, only the Head Start sample appears to be evenly distributed throughout the designated categories. The non-Head Start group is predominantly at the $10,000 or more income level (42.7%, N = 137). Both Head Start and the non-served group show a very similar distribution at this income level (18.4%, N = 72 and 17.7%, N = 21, respectively) as well as at the lower income levels. While the non-Head Start group has very few families reporting incomes below $5,000 (13.3%, N = 43), both Head Start and the non-served groups have one-third of the families below this level (35.9%, N = 141 and 33.5%, N = 40, respectively).

As expected, the Head Start sample is composed heavily of families making less than $10,000 (63.7%, N = 250), while the non-Head Start sample is heavily weighted with families above $10,000 (42.7%, N = 132). Since income also serves as an indicator for the "quality of home environment" and also reflects the ability of the parents to deal with and remediate a handicapping condition in a child, then evidence of differences by program requires consideration of this variable in the analysis.

## TABLE 5.1
## DISTRIBUTION OF FAMILY INCOME BY PROGRAM TYPE

| Family Income | Head Start % of Column | Non-Head Start % of Column | Non-Served % of Column |
|---|---|---|---|
| TOTAL | 100.0<br>(N=392) | 100.0<br>(N=321) | 100.0<br>(N=119) |
| Not Reported | 17.9<br>(N=70) | 19.6<br>(N=63) | 19.3<br>(N=23) |
| $0 to $999 | 1.8<br>(N=7) | 0.9<br>(N=3) | * |
| 1,000 to 1,999 | 5.6<br>(N=22) | 1.9<br>(N=6) | 0.8<br>(N=1) |
| 2,000 to 2,999 | 6.6<br>(N=26) | 4.0<br>(N=13) | 6.7<br>(N=8) |
| 3,000 to 3,999 | 10.7<br>(N=42) | 3.4<br>(N=11) | 10.9<br>(N=13) |
| 4,000 to 4,999 | 11.2<br>(N=44) | 3.1<br>(N=10) | 15.1<br>(N=18) |
| 5,000 to 5,999 | 7.9<br>(N=31) | 3.7<br>(N=12) | 11.8<br>(N=14) |
| 6,000 to 6,999 | 6.6<br>(N=26) | 5.9<br>(N=19) | 5.9<br>(N=7) |
| 7,000 to 7,999 | 6.4<br>(N=25) | 6.5<br>(N=21) | 5.0<br>(N=6) |
| 8,000 to 8,999 | 3.1<br>(N=12) | 1.9<br>(N=6) | 5.0<br>(N=6) |
| 9,000 to 9,999 | 3.8<br>(N=15) | 6.2<br>(N=20) | 1.7<br>(N=2) |
| 10,000 to 14,999 | 10.5<br>(N=41) | 18.1<br>(N=58) | 7.6<br>(N=9) |
| 15,000 and more | 7.9<br>(N=31) | 24.6<br>(N=79) | 10.1<br>(N=12) |

## OCCUPATIONAL STATUS

Table 5.2 presents the occupational status[1/] ratings of the respondents (higher ratings reflect occupations with higher socio-economic status). The Duncan Socioeconomic Index classifies occupations into ratings which reflect both the social status of the occupation as well as the earned income. For purposes of clarity of presentation the classification ratings, ranging from 01 (housewife) to 96 (doctors) are divided into decile groups (group 1 ranges from 1 to 10, group 2 ranges from 11 to 20, etc.). The figures show that the primary respondent in all three sample groups is a "housewife" and that the majority of respondents are in the lower two decile groups: 82.1 percent for Head Start, 69.6 percent for non-Head Start, and 77.1 percent for non-served. The Head Start sample is predominantly represented by low occupational status respondents, and while the other two groups also have a high percentage of low occupational status respondents, the non-Head Start sample has a somewhat better distribution in higher status occupations. This reflects a distribution bias which was expected, given the responsibilities of Head Start programs to provide services almost exclusively to poverty level populations.

Table 5.3 presents similar occupational status information for respondents' spouses (almost always fathers). Of special interest is the fairly high percentage of "unspecified" indicating no spouse and probably reflecting the number of single parent families. The non-Head Start sample has dramatically fewer single parent families (20.6%) than either Head Start (34.9%) or the non-served sample (30.3%).

Substantial differences between the study groups on the variable of occupational status suggests that the samples may be drawn from different populations. It is possible that certain elements of child growth and development could, in part, be based on these differences. Occupational status will be statistically adjusted when conducting covariate analyses of developmental age differences.

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[1/] Duncan Socio-Economic Index by: Peter M. Blau and Otis Dudley Duncan, The American Occupational Structure. New York: John Wiley & Sons, 1967, Table 4.1, pp. 122-123.

## TABLE 5.2
## DISTRIBUTION OF RESPONDENT'S[2] OCCUPATIONAL STATUS BY PROGRAM TYPE

| Occupational Status of Respondent (Duncan Socio-Economic Index)[1] | | Program Type | | |
|---|---|---|---|---|
| | | Head Start % of Column | Non-Head Start % of Column | Non-Served % of Column |
| Total | | 100.0<br>(N = 392) | 100.0<br>(N = 321) | 100.0<br>(N = 119) |
| Housewife (01) | | 66.8<br>(N = 262) | 59.8<br>(N = 192) | 61.3<br>(N = 73) |
| Decile Group Range | Group | | | |
| 02 to 10 | (1) | 6.3<br>(N = 14) | 2.4<br>(N = 8) | 4.9<br>(N = 6) |
| 11 to 20 | (2) | 10.0<br>(N = 39) | 7.4<br>(N = 24) | 9.9<br>(N = 12) |
| 21 to 30 | (3) | 4.3<br>(N = 17) | 1.5<br>(N = 5) | 3.2<br>(N = 4) |
| 31 to 40 | (4) | 2.0<br>(N = 8) | 2.1<br>(N = 7) | 2.5<br>(N = 3) |
| 41 to 50 | (5) | 4.7<br>(N = 18) | 7.6<br>(N = 28) | 4.2<br>(N =5) |
| 51 to 60 | (6) | 1.0<br>(N = 4) | 3.9<br>(N = 13) | 1.7<br>(N = 2) |
| 61 to 70 | (7) | 6.6<br>(N = 8) | 5.7<br>(N = 19) | 1.6<br>(N = 6) |
| 71 to 80 | (8) | 1.7<br>(N = 2) | 4.6<br>(N = 15) | 3.3<br>(N = 13) |
| 81 to 90 | (9) | 0.8<br>(N = 1) | 0.3<br>(N = 1) | * |
| 91 to 100 | (10) | * | * | * |
| Unspecified | | 0.8<br>(N = 2) | 3.1<br>(N = 10) | 0.8<br>(N = 1) |

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[1] Duncan Socio-Economic Index by: Peter M. Blau and Otis Dudley Duncan, The American Occupational Structure. New York: John Wiley & Sons, 1967, Table 4.1, pp. 122 123. (See Appendix I)

[2] Almost always mothers' occupational status.

## TABLE 5.3
## DISTRIBUTION OF OCCUPATION STATUS OF RESPONDENTS' SPOUSE[2] BY PROGRAM TYPE

| Occupational Status of Respondents' Spouse (Duncan Socio-Economic Index)[1] | | Program Type | | |
|---|---|---|---|---|
| | | Head Start % of Column | Non-Head Start % of Column | Non-Served % of Column |
| Total | | 100.0<br>(N = 392) | 100.0<br>(N = 321) | 100.0<br>(N = 119) |
| Housewife (01) | | 1.3<br>(N = 5) | 5.6<br>(N = 18) | * |
| Decile Group Range | Group | | | |
| 02 to 10 | (1) | 18.4<br>(N = 72) | 6.4<br>(N = 24) | 14.3<br>(N = 17) |
| 11 to 20 | (2) | 17.0<br>(N = 67) | 17.6<br>(N = 57) | 15.1<br>(N = 18) |
| 21 to 30 | (3) | 7.1<br>(N = 27) | 9.9<br>(N = 32) | 5.0<br>(N = 6) |
| 31 to 40 | (4) | 10.0<br>(N = 39) | 11.6<br>(N = 37) | 9.2<br>(N = 11) |
| 41 to 50 | (5) | 5.2<br>(N = 20) | 8.7<br>(N = 28) | 11.6<br>(N = 14) |
| 51 to 60 | (6) | 2.5<br>(N = 9) | 3.3<br>(N = 11) | 5.8<br>(N = 7) |
| 61 to 70 | (7) | 1.6<br>(N = 6) | 4,7<br>(N = 16) | 3.3<br>(N = 4) |
| 71 to 80 | (8) | 2.8<br>(N = 8) | 5.5<br>(N = 18) | 3.3<br>(N = 4) |
| 81 to 90 | (9) | 1.1<br>(N = 4) | 2.4<br>(N = 8) | 2.5<br>(N = 3) |
| 91 to 100 | (10) | * | 2.5<br>(N = 8) | * |
| Unspecified | | 34.7<br>(N = 136) | 20.6<br>(N = 66) | 30.3<br>(N = 36) |

[1] Duncan Socio-Economic Index by: Peter M. Blau and Otis Dudley Duncan, The American Occupational Structure. New York: John Wiley & Sons, 1967, Table 4.1, pp. 122-123.

[2] Almost always fathers' occupational status.

### *EDUCATION LEVEL*

Level of respondent (mother's) education is shown in Table 5.4. Half of the Head Start respondents (50%) have less than a high school degree while only one-fourth (23.7%) of the non-Head Start respondents and only one-third (36.1%) of the non-served have not at least graduated from high school. The non-Head Start group is the best-educated with one-third (34%) having "some college" or above. Table 5.5 presents the level of education for the respondent's spouse (father's education). The pattern is similar to respondents with most Head Start spouses having less than a high school degree while the non-Head Start group is the best educated. This seems to confirm the group differences identified by the variables of income and occupational status, all of which contribute to defining the "quality of the home environment." If more highly educated families are better able to cope with a handicapped child, either through greater familiarity with the institutions providing education or because of more knowledge about handicaps and education, then differences in child progress may be related to this variable. Educational level will be statistically adjusted in the analyses of group differences.

### *PRESENCE OF OTHER SIBLINGS*

If a family has other children, then presumably the family has more experience in child development and with the problems associated with raising a child. It seems reasonable, therefore, to consider this as an important variable which might affect the child's progress on the dependent measures. Table 5.6 shows the distribution of family size by program. Head Start has the largest mean family size (4.8 persons) compared with non-Head Start and non-served (4.4 persons each). Together with other family demographic and socioeconomic variables (e.g., family income, educational status, occupational status, etc.) family size can produce strong effects on child development independently of intended program outcomes. Because family size, as measured by the number of siblings in a child's family, differs in the Head Start and non-Head Start study groups, assessment of differential program effects treated number of siblings as an important control variable.

# TABLE 5.4
# DISTRIBUTION OF LEVEL OF RESPONDENTS'[1] EDUCATION BY PROGRAM TYPE

| Level of Education of Respondent | Program Type | | |
|---|---|---|---|
| | Head Start % of Column | Non-Head Start % of Column | Non-Served % of Column |
| Total | 100.0<br>(N = 392) | 100.0<br>(N = 321) | 100.0<br>(N = 119) |
| Less than high school | 50.0<br>(N = 192) | 23.7<br>(N = 76) | 36.1<br>(N = 43) |
| High school graduate | 34.2<br>(N = 134) | 42.4<br>(N = 136) | 41.2<br>(N = 49) |
| Some college | 13.8<br>(N = 54) | 23.7<br>(N = 76) | 17.6<br>(N = 21) |
| College graduate | 2.0<br>(N = 8) | 5.0<br>(N = 16) | 4.2<br>(N = 5) |
| Postgraduate study | 1.0<br>(N = 4) | 5.3<br>(N = 17) | 0.8<br>(N = 1) |

[1] Almost always mother's education.

## TABLE 5.5
## DISTRIBUTION OF LEVEL OF RESPONDENTS'[1] SPOUSE BY PROGRAM TYPE

| Level of Education of Respondent's Spouse | Program Type | | |
|---|---|---|---|
| | Head Start % of Column | Non-Head Start % of Column | Non-Served % of Column |
| Total | 100.0<br>(N = 392) | 100.0<br>(N = 321) | 100.0<br>(N = 119) |
| Not Reported (or no Spouse) | 31.1<br>(N = 122) | 19.3<br>(N = 62) | 26.1<br>(N = 31) |
| Less than high school | 35.5<br>(N = 139) | 19.3<br>(N = 62) | 20.2<br>(N = 24) |
| High school graduate | 20.9<br>(N = 82) | 17.4<br>(N = 56) | 36.1<br>(N = 43) |
| Some college | 8.9<br>(N = 35) | 28.0<br>(N = 90) | 13.4<br>(N = 16) |
| College graduate | 2.3<br>(N = 9) | 8.7<br>(N = 28) | 1.7<br>(N = 2) |
| Postgraduate study | 1.3<br>(N = 5) | 6.9<br>(N = 22) | 2.5<br>(N = 3) |

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[1] Almost always father's education.

## TABLE 5.6
## DISTRIBUTION OF FAMILY SIZE BY PROGRAM TYPE

| Family Size | Program Type | | |
|---|---|---|---|
| | Head Start % of Column | Non-Head Start % of Column | Non-Served % of Column |
| Total | 100.0<br>(N = 392) | 100.0<br>(N = 321) | 100.0<br>(N = 119) |
| 2 | 8.1<br>(N = 32) | 5.3<br>(N = 17) | 8.4<br>(N = 10) |
| 3 | 16.8<br>(N = 66) | 23.7<br>(N = 76) | 19.3<br>(N = 23) |
| 4 | 26.5<br>(N = 104) | 31.8<br>(N = 102) | 27.7<br>(N = 33) |
| 5 | 21.4<br>(N = 84) | 22.4<br>(N = 72) | 21.0<br>(N = 25) |
| 6 | 12.5<br>(N = 49) | 6.2<br>(N = 20) | 9.2<br>(N = 11) |
| 7 | 5.4<br>(N = 21) | 4.4<br>(N = 14) | 10.1<br>(N = 12) |
| 8 | 3.1<br>(N = 12) | 2.8<br>(N = 9) | 2.5<br>(N = 3) |
| 9 | 4.1<br>(N = 16) | 0.6<br>(N = 2) | 0.8<br>(N = 1) |
| 10 | 0.5<br>(N = 2) | * | * |
| More than 10 | 1.7<br>(N = 6) | 2.7<br>(N = 9) | * |
| Mean Family Size | 4.8 persons | 4.4 persons | 4.4 persons |

## Parent and Child Interaction

The High/Scope Home Environment Scale is designed to assess the amount and quality of interaction between the child and a primary adult in the family, usually the mother. Because an increase in parent-child interaction is frequently cited as an educational goal of many preschool programs, gains on this measure could also be considered as treatment effects with delayed or time-lagged effects on child growth and development. This is a critical measure of potential delayed effects for pretest-posttest analyses. Table 5.7A presents the mean scores for this measure for each handicapping condition by program type. Certain pretest differences are apparent. For example, mean pretest scores for each study group show that both the Head Start and non-Head Start groups have a higher level of parent-child interaction than do the non-served group and this difference holds for the posttest data also.

| | Head Start<br>(N=373) | Non-Head Start<br>(N=313) | Non-Served<br>(N=118) |
|---|---|---|---|
| Mean Pretest Score | 32.8 | 31.2 | 28.6 |
| Standard Deviation | 7.3 | 8.2 | 7.1 |
| Mean Posttest Score | 33.8 | 32.2 | 29.4 |
| Standard Deviation | 7.7 | 8.3 | 8.8 |

In addition, there are pronounced program and pre-post differences by handicapping condition. For example, the health or developmentally impaired and mentally retarded non-served groups are significantly lower than either the Head Start or the non-Head Start groups. While both Head Start and non-Head Start show almost no gain from pretest to posttest, the non-served group shows a moderate loss (-3.4 points) for the health and developmentally impaired and a slight gain (1.4 points) for the mentally retarded. Overall the largest pre-post changes occur within the low incidence handicaps. When these are aggregated into the "other" category, non-served shows a relatively sharp loss (-6.0 points), attributable to large losses by the blind and deaf children. This may reflect the quality of parent-child interactions which tend to be inhibited without the aid of a program to structure and support certain interactions. These pre-post differences are summarized in Table 5.7B.

# TABLE 5.7A

## MEAN SCORES AND STANDARD DEVIATIONS OF THE HIGH/SCOPE HOME ENVIRONMENT SCALE FOR ALL HANDICAPPING CONDITIONS

| Program Type / Handicapping Condition | HEAD START | | | | | NON-HEAD START | | | | | Non-Served | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Pre-Test | | Post-Test | | | Pre-Test | | Post-Test | | | Pre-Test | | Post-Test | | |
| | Mean Score | Standard Deviation | Mean Score | Standard Deviation | Mean Change | Mean Score | Standard Deviation | Mean Score | Standard Deviation | Mean Change | Mean Score | Standard Deviation | Mean Score | Standard Deviation | Mean Change |
| Total | 32.8 | 7.3<br>(N=373) | 33.8 | 7.7 | 1.0[d] | 31.2 | 8.2<br>(N=313) | 32.2 | 8.3 | 1.0[d] | 28.6 | 8.1<br>(N=118) | 29.4 | 8.8 | 0.8 |
| Other (1-4)[1/] | 33.3 | 5.9<br>(N=38) | 34.3 | 7.2 | 1.1 | 32.4 | 8.8<br>(N=16) | 35.3 | 5.2 | 2.9 | 30.3 | 7.1<br>(N=6) | 24.0 | 12.3 | -6.0[a] |
| 1. Visually Impaired | 34.3 | 5.9<br>(N=18) | 34.9 | 6.9 | 0.6 | 43.0 | *<br>(N=1) | 38.0 | * | -5.0[a] | 29.0 | *<br>(N=1) | 33.0 | * | 4.0[a] |
| 2. Blind | 29.0 | *<br>(N=1) | 32.0 | * | 3.0[a] | 21.5 | 7.8<br>(N=2) | 35.0 | 4.2 | 13.5 | 28.0 | 2.3<br>(N=2) | 19.5 | 10.6 | -8.5[a] |
| 3. Hearing Impaired | 31.9 | 5.7<br>(N=15) | 32.3 | 7.8 | 0.4 | 31.9 | 7.7<br>(N=11) | 34.6 | 5.6 | 2.7 | 34.0 | 14.1<br>(N=2) | 30.5 | 16.3 | 3.5[a] |
| 4. Deaf | 35.0 | 7.5<br>(N=4) | 39.8 | 3.6 | 4.8[a] | 40.5 | 4.6<br>(N=2) | 38.0 | 7.1 | -2.5[a] | 29.0 | *<br>(N=1) | 11.0 | * | 18.0[a] |
| 5. Physically Handicapped | 33.3 | 6.7<br>(N=71) | 34.3 | 8.0 | 1.1 | 31.6 | 8.5<br>(N=56) | 32.9 | 9.0 | 1.3[b] | 28.4 | 7.6<br>(N=18) | 28.0 | 8.3 | 0.0 |
| 6. Speech Impaired | 33.0 | 7.5<br>(N=107) | 33.2 | 7.9 | 0.2 | 32.9 | 6.9<br>(N=51) | 33.9 | 7.2 | 1.0 | 30.9 | 8.6<br>(N=50) | 33.2 | 7.6 | 2.3[c] |
| 7. Health or Developmentally Impaired | 33.5 | 7.4<br>(N=64) | 33.8 | 7.2 | 0.3 | 30.1 | 8.7<br>(N=29) | 31.8 | 9.4 | 0.7 | 26.7 | 6.3<br>(N=18) | 23.3 | 9.1 | -3.4[b] |
| 8. Mentally Retarded | 30.2 | 7.7<br>(N=43) | 31.3 | 7.8 | 1.1 | 29.6 | 8.5<br>(N=117) | 29.8 | 8.7 | 0.2 | 24.0 | 6.8<br>(N=21) | 26.5 | 6.7 | 1.4[c] |
| 9. Specific Learning Disability | 34.9 | 5.7<br>(N=27) | 37.4 | 6.5 | 2.5 | 33.1 | 5.5<br>(N=20) | 33.8 | 4.9 | 0.7 | 29.5 | 10.6<br>(N=2) | 33.0 | 4.2 | 3.5[a] |
| 10. Seriously Emotionally Disturbed | 31.8 | 7.8<br>(N=23) | 33.7 | 8.0 | 1.9 | 34.3 | 7.8<br>(N=24) | 37.0 | 6.3 | 2.3[c] | 32.3 | 11.6<br>(N=3) | 35.7 | 10.0 | 3.4[a] |

[1/] "Other" includes the blind, deaf, visually impaired, and hearing impaired.

a. Too few cases to establish significance
b. Significant at the .1 level
c. Significant at the .05 level
d. Significant at the .01 level

### TABLE 5.7B

### SIGNIFICANT CHANGES[1] IN MEAN SCORES OF THE HIGH/SCOPE HOME ENVIRONMENT SCALE FOR ALL HANDICAPPING CONDITIONS

| Program Type / Handicapping Condition | HEAD START | NON-HEAD START | NON-SERVED |
|---|---|---|---|
| Total | + | + | 0 |
| Other[3] | 0 | 0 | 0[2] |
| Visually Impaired | 0 | 0[2] | 0[2] |
| Blind | 0[2] | 0[2] | 0[2] |
| Hearing Impaired | 0 | 0 | 0[2] |
| Deaf | 0[2] | 0[2] | 0[2] |
| Physically Handicapped | 0 | + | 0 |
| Speech Impaired | 0 | 0 | + |
| Health or Developmentally Impaired | 0 | 0 | - |
| Mentally Retarded | 0 | 0 | + |
| Specific Learning Disability | 0 | 0 | 0[2] |
| Emotionally Disturbed | 0 | + | 0[2] |

[1] (+) = positive change significant at the .01 level;
(-) = negative change significant at the .01 level;
(0) = no significant change.

[2] Too few cases to establish significance.

[3] The category "other" includes blind, visually impaired, deaf, and hearing impaired.

The measure of variance (standard deviation) shows remarkable consistency from pretest to posttest and across programs (within two or three points generally) except for the four low incidence categories which are within three to eight points. As expected, aggregating the four low incidence categories into a single "other" category brings these standard deviations into the same general range as the rest of the handicapping conditions. The two non-served handicap categories with small sample sizes, specific learning disability (N=2) and emotionally disturbed (N=3), do not provide stable enough measures for comparison purposes. While the variances across all handicap categories appear to be comparable enough for handicap specific analyses, these latter two non-served handicap categories will not be included in any analyses.

Table 5.8A presents mean scores on the High/Scope Home Environment Scale by severity level. All standard deviations for pretest and posttest as well as across severity level ratings are comparable (within two or three points) enabling comparative analysis. Almost all of the mean changes from pretest to posttest are small (one or two points) and positive with three exceptions:

|  | Pre-Post Change |
|---|---|
| Non-Head Start Profound | -1.3 |
| Non-Served Severe | -3.1 |
| Non-Served Profound | -2.7 |

In addition, the mean scores (both pretest and posttest scores) consistently drop lower as the severity level increases. This holds for each program except at the profound severity level in Head Start, which shows a slight increase. These changes are summarized in Table 5.8B and are better illustrated in Figure 5.1 on the following page (for illustrative purposes only pretest scores are shown). Presumably, as the severity level of the child increases there is less and less capability to interact at high qualitative levels with the parent. The progressive decrease, which, although evident across all three groups, is less pronounced in the Head Start group. In fact, Head Start shows a slight increase at the profound level, possibly reflecting the heavy involvement of parents and the effects of the parent education program.

## TABLE 5.8A

## MEAN SCORES AND STANDARD DEVIATIONS ON THE HIGH/SCOPE HOME ENVIRONMENT SCALE FOR EACH SEVERITY LEVEL

| Program / Severity | HEAD START | | | | | NON-HEAD START | | | | | NON-SERVED | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Pretest | | Posttest | | | Pretest | | Posttest | | | Pretest | | Posttest | | |
| | Mean Score | Standard Deviation | Mean Score | Standard Deviation | Mean Change | Mean Score | Standard Deviation | Mean Score | Standard Deviation | Mean Change | Mean Score | Standard Deviation | Mean Score | Standard Deviation | Mean Change |
| Total | 32.8 | 7.3<br>(N=374) | 33.8 | 7.7 | 1.0[d] | 31.2 | 8.2<br>(N=313) | 32.2 | 8.3 | 1.0[d] | 28.6 | 8.1<br>(N=119) | 29.4 | 8.8 | 0.8 |
| Mild | 34.3 | 7.3<br>(N=158) | 34.5 | 7.5 | 0.2 | 33.2 | 7.5<br>(N= 78) | 33.8 | 8.2 | 0.6 | 32.2 | 8.0<br>(N= 48) | 33.9 | 7.7 | 1.7[b] |
| Moderate | 32.2 | 6.8<br>(N=145) | 33.5 | 7.8 | 1.3[c] | 32.6 | 7.3<br>(N=135) | 33.7 | 7.0 | 1.1[d] | 26.9 | 5.9<br>(N= 33) | 30.4 | 6.1 | 3.5[d] |
| Severe | 30.8 | 7.5<br>(N= 60) | 32.5 | 7.4 | 1.7[c] | 28.6 | 8.4<br>(N= 71) | 30.3 | 8.3 | 1.7[c] | 28.7 | 7.9<br>(N= 23) | 25.6 | 8.5 | -3.1[b] |
| Profound | 31.0 | 9.0<br>(N= 11) | 33.1 | 10.3 | 2.1 | 26.6 | 10.0<br>(N= 29) | 25.3 | 10.2 | -1.3 | 20.4 | 6.7<br>(N= 14) | 17.6 | 5.2 | -2.7 |

a. Too few cases to establish significance
b. Significant at the .1 level
c. Significant at the .05 level
d. Significant at the .01 level

## TABLE 5.8B

## SIGNIFICANT CHANGES[1] IN MEAN SCORE OF THE HIGH/SCOPE HOME ENVIRONMENT SCALE FOR ALL SEVERITY LEVELS

| Program Type / Severity Level | HEAD START | NON-HEAD START | NON-SERVED |
|---|---|---|---|
| Total | + | + | 0 |
| Mild | 0 | 0 | + |
| Moderate | + | + | + |
| Severe | + | + | - |
| Profound | 0 | 0 | 0 |

---

[1] (+) = positive change significant at the .01 level;
(-) = negative change significant at the .01 level;
(0) = no significant change.

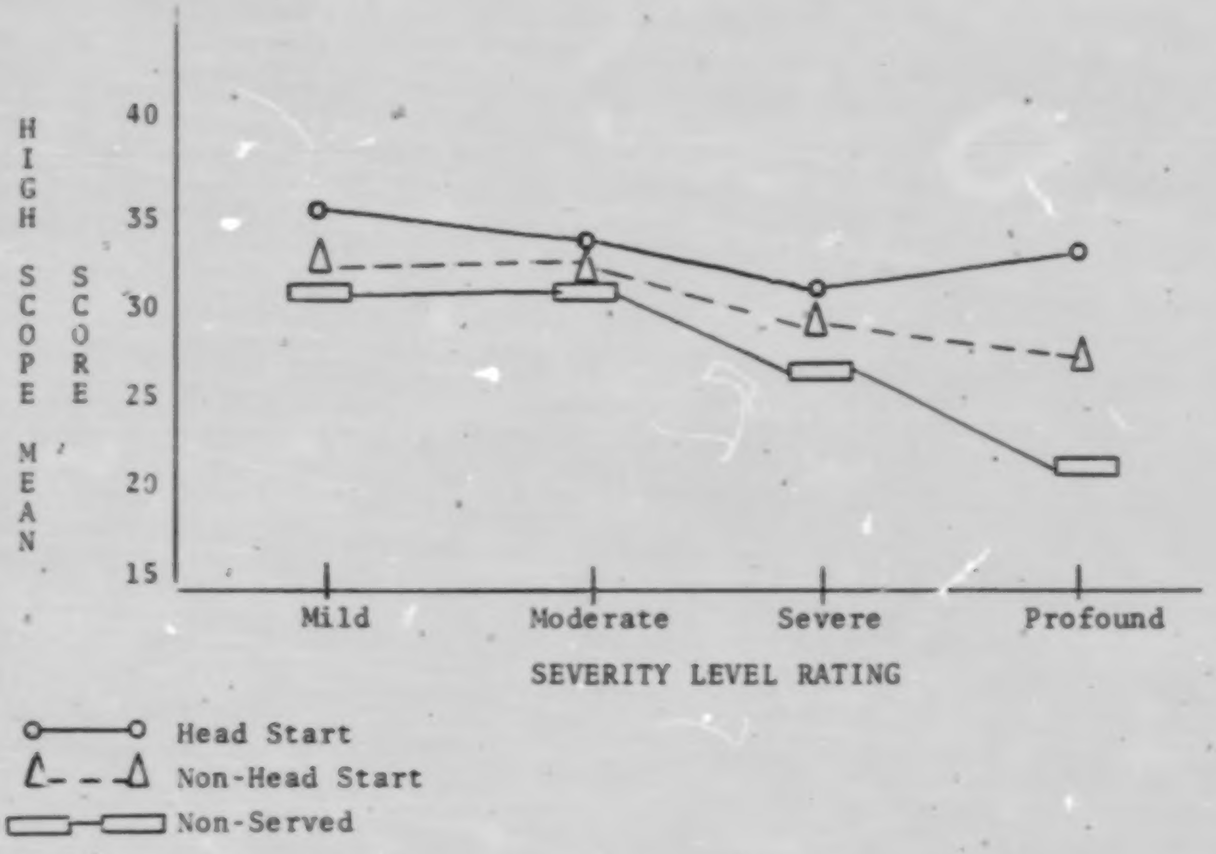

FIGURE 5.1

Severity level of the handicapping condition produces obvious differential effects on the High/Scope Home Environment Scale. However, variance measures are comparable enough to permit use of the High/Scope data in comparative analyses.

Attitude Towards Mainstreaming

Parents who had handicapped children enrolled in predominantly mainstream programs were asked to complete a nine-item questionnaire assessing their relative attitudes towards the mainstreaming concept. The validity and sensitivity of this scale has been extensively discussed in the Interim Technical Report. Table 5.9 presents the mean scores on this questionnaire by program type. Note that only 25 of the non-Head Start children are in mainstreamed programs while all but twenty-six of the Head Start children are mainstreamed.

## TABLE 5.9

## PARENT ATTITUDE TOWARD MAINSTREAMING BY PROGRAM

Program Type

| Attitude Scale | Possible Scores | | Head Start (N=364) 1/ | | | | | Non-Head Start (N=25) 2/ | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Pre-Test | | Post-Test | | Change in Mean Score | Pre-Test | | Post-Test | | Change in Mean Score |
| | Minimum | Maximum | Mean Score | Standard Deviation | Mean Score | Standard Deviation | | Mean Score | Standard Deviation | Mean Score | Standard Deviation | |
| Parent Attitudes Toward Mainstreaming: | | | | | | | | | | | | |
| Parent Attitudes Toward Mainstreaming | 9 | 27 | 22.8 | 3.2 | 23.0 | 3.1 | 0.2 | 22.0 | 2.7 | 22.1 | 3.2 | 0.1 |

1/ Number of Head Start parents completing mainstreaming attitude scales.

2/ Number of Non-Head Start parents completing mainstreaming attitude scales.

a. Too few cases to establish significance
b. Significant at the .1 level
c. Significant at the .05 level
d. Significant at the .01 level

The nine-item questionnaire has three response choices for each item (1 = negative, 2 = neutral, 3 = positive) allowing for a range of scores from three (most negative attitude toward mainstreaming) to 27 (most positive attitude toward mainstreaming). A score of 18 would be average and would indicate an overall "neutral" attitude. Generally, the Head Start respondents have a slightly more positive attitude towards mainstreaming although both groups show consistently positive attitudes well above the neutral level. The small sample size in the non-Head Start group makes group comparisons difficult, but the tendency for differences between means to be so small suggests that there are no substantive differences between groups for the mainstreamed sample. This lack of difference between groups holds for the posttest measure also.

Attitudes and Values Concerning Education

Eight separate attitude measures, each consisting of from three to six items, were administered to parents to assess specific educational attitudes and values:

1. The parent is powerless to affect the educational program;
2. The parent appreciates the teacher's efforts;
3. Belief that parental authority is absolute;
4. Belief that children are basically good;
5. Belief that children learn actively;
6. Belief that children should all be treated uniformly;
7. Belief that the teacher's authority is absolute;
8. Rejection of maternal role.

Since the parents' attitude in any of these dimensions could have direct effects on the immediate performance and indirect effects on long-term development of the handicapped child, any differences between sample groups could obscure effects otherwise attributable to the program. If the samples are randomly selected and if respondents are all randomly assigned to groups, then group differences should not exist (or differences that do exist would be due to sample variations). However, certain selection and subsample biases are already evident and have been discussed; therefore some group differences might be expected.

Table 5.10 presents the means for each specified attitude by program type. Small, but non-significant, differences can be detected between groups for scales 1, 3, 6, 7, and 8. There are no significant pre-post differences, indicating that these attitude variables, while they may be important in affecting certain outcome measures, did not themselves undergo significant changes over the course of the study.

## SUMMARY

For the sample of Head Start, non-Head Start, and non-served respondents there are certain key attitudes and characteristics of the family that distinguish between the groups, show evidence of pretest-posttest differences, or show differential effects by severity level or handicapping condition. Since these differences may have effects that are associated with, or similar to, the effects that are attributable to the program itself, it is important to statistically adjust for the effects of these variables which show evidence of differential effects. In order to describe as fully as possible the effects of each program, it is necessary to control for the effects of selection bias which are present in the populations served. There are two specific variable types which require statistical adjustments: variables with identified differential effects by programs, and variables with identified group differences by severity level or by handicapping conditions.

- Variables with documented differential associations with outcome measured by program: four demographic characteristics (family income, occupational level, presence of other siblings, and education level of parents) showed significant evidence of associations that are different for each type of program. In order for these associations not to be confounded with "program effects" and in order to prevent the subsequent

# TABLE 5.10

## MEAN SCORES OF PARENT ATTITUDES BY PROGRAM TYPE

| | | | | Program Type | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | HEAD START (n=390) | | | | | NON-HEAD START (n=321) | | | | |
| Scale No. | Attitude Scales | Possible Scores | | Pre-Test | | Post-Test | | Change in Mean Score | Pre-Test | | Post-Test | | Change in Mean Score |
| | | Minimum | Maximum* | Mean Score | Standard Deviation | Mean Score | Standard Deviation | | Mean Score | Standard Deviation | Mean Score | Standard Deviation | |
| | General Attitudes: | | | | | | | | | | | | |
| 1 | Parent Powerlessness | 3 | 15 | 12.0 | 2.9 | 11.9 | 3.1 | -0.1 | 12.4 | 2.7 | 12.4 | 2.9 | 0.0 |
| 2 | Parent's Appreciation of Teacher | 3 | 15 | 14.3 | 3.4 | 14.2 | 6.5 | -0.1 | 14.6 | 1.3 | 14.4 | 1.4 | -0.2 |
| | Educational Attitudes: | | | | | | | | | | | | |
| 3 | Parental Authority is Absolute | 4 | 20 | 15.4 | 4.0 | 15.6 | 4.0 | 0.2 | 13.4 | 4.2 | 13.6 | 4.4 | 0.2 |
| 4 | Children Basically Good | 3 | 15 | 12.6 | 2.4 | 12.6 | 2.5 | 0.0 | 12.2 | 2.5 | 12.3 | 2.6 | 0.1 |
| 5 | Children Learn Actively | 2 | 15 | 12.7 | 2.1 | 12.9 | 2.0 | 0.2 | 12.6 | 2.0 | 12.4 | 2.1 | -0.2[b] |
| 6 | Children should be Treated Uniformly | 5 | 25 | 21.6 | 4.3 | 21.3 | 4.5 | -0.3 | 19.0 | 5.1 | 19.1 | 5.2 | 0.1 |
| 7 | Teacher's Authority is Absolute | 4 | 20 | 16.7 | 3.4 | 16.4 | 3.7 | -0.3[b] | 14.9 | 3.8 | 14.7 | 4.3 | -0.2 |
| 8 | Rejection of Maternal Role | 5 | 25 | 10.6 | 4.8 | 10.8 | 5.0 | 0.2 | 10.0 | 4.6 | 9.9 | 1.7 | -0.1 |

*High scores reflects more agreement with scale concept; low scores reflect more disagreement with scale concept.

a. Too few cases to establish significance
b. Significant at the .1 level
c. Significant at the .05 level
d. Significant at the .01 level

obscuring of "program effects," these variables were statistically adjusted in the final data analysis effort for between-group comparisons.

- Variables with identified group differences by severity level or handicapping condition: the amount of parent and child interaction has been identified as a secondary treatment goal by many programs. The selection of this goal for treatment is based on the assumption that both primary and secondary effects on the child's growth and development are effected through modifying the amount and/or quality of parent and child interaction and through enhancing the attitudinal support of the parents. Pronounced pre-post differences on the High/Scope Home Environment Scale were present for certain handicapping conditions and for certain severity levels and apparently absent for others.
- In addition, the eight attitude/value measures and the measure of parental attitudes toward mainstreaming showed no significant evidence of differential effects by program or by severity level or handicapping condition.

# 6

# STUDY FINDINGS:
# PROGRAM/STAFF VARIABLES

## Background

Certain characteristics of the programs sampled for the study may have significant effects on outcome measures or may be systematically different for Head Start and non-Head Start programs. Such characteristics as the size of the program, the amount of available funds, or staffing ratios, for example, could systematically affect the amount or quality of services provided to the handicapped child. Since such differences in instruction are presumed to affect developmental progress as assessed by the dependent measures, it is worthwhile to identify differential program effects. Data on two types of program variables were collected: characteristics of the programs (enrollment levels, budgets, and mainstreaming options) and staff characteristics (salary, level of education, training, and related services). In addition, three measures of teacher attitudes were administered.

## Characteristics of Programs

These characteristics roughly categorize programs by variables which tend not to fluctuate from year to year and are generally stable throughout any given year. While a given program might make changes in curriculum materials from one year to the next, for example, that program tends not to change curricula frequently during a program year. Five specific variables are addressed in this regard: enrollment levels, per pupil expenditure, years of service to preschool handicapped, mainstreaming options, and classroom size/ composition.

### *PER PUPIL EXPENDITURE*

Table 6.1 presents program budgets expressed as per-child expenditure and shows that the majority of Head Start programs (56%) have expenditures within the $1,000 to $1,500 per child range. However, most of the non-Head Start programs have per child expenditures above $2,500 (64.9%). These differences in the relative expenditures per child certainly reflect substantial differences in the capability of some programs to utilize other resources, maintain teaching staff, provide training, and conduct other upgrading activities.

TABLE 6.1

PER CHILD EXPENDITURES BY PROGRAM TYPE

| Budget | Program Type | |
|---|---|---|
| | Head Start % of Column | Non-Head Start % of Column |
| Total | 100.0<br>(N=53) | 100.0<br>(N=48) |
| $ 500 per child or less | 9.4<br>(N=5) | 12.5<br>(N=6) |
| $ 501 to $1,000 per child | 5.6<br>(N=3) | 2.1<br>(N=1) |
| $1,001 to $1,500 per child | 56.6<br>(N=30) | 4.2<br>(N=2) |
| $1,501 to $2,500 per child | 20.8<br>(N=11) | 16.7<br>(N=8) |
| $2,501 to $5,000 per child | 5.6<br>(N=3) | 22.9<br>(N=11) |
| Over $5,000 per child | 1.8<br>(N=1) | 41.7<br>(N=20) |

### *ENROLLMENT LEVELS*

Overall enrollment levels of programs for the study sample are shown in Table 6.2. Almost all of the non-Head Start sample (86.7%) are enrolled in programs which have total enrollments of less than 100 children, while most Head Start children (82.8%) are in programs which have preschool enrollments of more than 100 children.

# TABLE 6.2

## DISTRIBUTION OF THE SAMPLE BY PRE-SCHOOL ENROLLMENT FOR PROGRAM TYPE

| Pre-school Enrollment RANGE | Program Type |  |
|---|---|---|
|  | Head Start % of column | Non-Head Start % of column |
| LESS than 15 children | * | 16.7<br>(N=53) |
| 15 to 30 | 4.9<br>(N=19) | 37.1<br>(N=118) |
| 31 to 50 | 1.0<br>(N=4) | 21.4<br>(N=68) |
| 51 to 100 | 10.2<br>(N=40) | 11.0<br>(N=35) |
| 101 to 300 | 38.5<br>(N=150) | 7.0<br>(N=22) |
| 103 to 600 | 24.9<br>(N=97) | 4.1<br>(N=13) |
| 601 to 1000 | 12.9<br>(N=68) | * |
| GREATER THAN 1000 | 5.9<br>(N=23) | 2.2<br>(N=7) |

Table 6.3 shows that the ratio of handicapped to non-handicapped children for each program is markedly different. While 71.2 percent of Head Start children are enrolled in programs which have 20 percent or fewer handicapped children in them, fully 86.9 percent of the non-Head Start children are in programs which have 100 percent handicapped enrollment. This indicates that while the majority of non-Head Start programs are categorical programs with no opportunity for mainstreaming, almost all Head Start programs have three times as many non-handicapped children as handicapped.

## *MAINSTREAMING OPTIONS*

Information on the extent of mainstreaming used by each program was assessed from two sources: program directors who reported on the use of mainstreaming throughout their program and the teachers' report of whether the handicapped child being studied was mainstreamed or not. Tables 6.4 through 6.6 presents the extent of mainstreaming for the study sample as reported by program directors on the availability and use of mainstreaming throughout their programs by handicapping condition and by severity level. According to these directors (Table 6.4) almost all Head Start children in the sample were mainstreamed completely while very few of the non-Head Start children (Table 6.5) were mainstreamed, regardless of handicapping condition or severity level (Table 6.6). Most of the non-Head Start programs are categorical programs that only serve the handicapped. The availability of mainstreaming options are very similar within program types for all handicap categories and severity levels.

The second source of information on mainstreaming is the child's teacher. These data are presented in Table 6.7. According to the teachers, 98.5 percent of the Head Start handicapped children in the sample are mainstreamed compared with only 14.6 percent from non-Head Start sample. This suggests that the rate of mainstreaming used by the non-Head Start programs is a considerably lower rate than it is reported to be available. This may reflect severity level (the more severely handicapped the child the more difficult to mainstream) or the self contained (and probably isolated) nature of the

## TABLE 6.3

## DISTRIBUTION OF THE SAMPLE BY HANDICAP RATIO FOR PROGRAM TYPE

| Ratio of Handicapped to Non-Handicapped Children | Program Type | |
|---|---|---|
| | Head Start % of column | Non-Head Start % of column |
| Less than 10% handicapped | 32.4 (N=127) | 4.0 (N=13) |
| 10% to 20% handicapped | 38.8 (N=152) | 4.4 (N=14) |
| 20% to 30% handicapped | 13.5 (N=53) | * |
| 30% to 99% handicapped | 13.5 (N=53) | 4.7 (N=15) |
| 100% handicapped | 1.8 (N=7) | 86.9 (N=279) |

# TABLE 6.4

## DISTRIBUTION OF THE HEAD START SAMPLE FOR HANDICAPPING CONDITION BY MAINSTREAMING OPTIONS

| Mainstreaming Options | HANDICAPPING CONDITION | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Visually Impaired | Blind | Hearing Impaired | Deaf | Physically Handicapped | Speech Impaired | Health or Developmentally Impaired | Mentally Retarded | Specific Learning Disability | Seriously Emotionally Disturbed |
| | % of column | % of column | % of column | % of column | % of column | % of column | % of column | % of column | % of column | % of column |
| Total | 100.0<br>(N=18) | 100.0<br>(N=1) | 100.0<br>(N=15) | 100.0<br>(N=5) | 100.0<br>(N=71) | 100.0<br>(N=115) | 100.0<br>(N=67) | 100.0<br>(N=46) | 100.0<br>(N=27) | 100.0<br>(N=26) |
| Complete mainstreaming of handicapped child into a regular classroom *(no supportive services provided)* | 44.4<br>(N=8) | * | 46.7<br>(N=7) | 20.0<br>(N=1) | 53.5<br>(N=38) | 24.3<br>(N=28) | 44.8<br>(N=30) | 32.6<br>(N=15) | 22.2<br>(N=6) | 53.8<br>(N=14) |
| Complete mainstreaming of handicapped child into a regular classroom with supportive assistance provided by a specialist | 33.3<br>(N=6) | 100.0<br>(N=1) | 53.3<br>(N=8) | 80.0<br>(N=4) | 35.2<br>(N=25) | 70.4<br>(N=81) | 43.3<br>(N=29) | 60.9<br>(N=28) | 44.4<br>(N=12) | 42.3<br>(N=11) |
| Complete mainstreaming of handicapped children in a classroom where the regular classroom teacher and a special education teacher cooperatively work with all children *(a team arrangement)* | 5.6<br>(N=1) | * | * | * | 1.4<br>(N=1) | 1.7<br>(N=2) | 1.5<br>(N=1) | * | * | 3.8<br>(N=1) |
| Reverse mainstreaming in which normal children become part of a special education class | * | * | * | * | 7.0<br>(N=5) | 0.9<br>(N=1) | 4.5<br>(N=3) | * | 3.7<br>(N=1) | * |
| Partial mainstreaming where handicapped children are in a special education class but go to mainstreamed classes for one or more regular classroom activities | 5.6<br>(N=1) | * | * | * | 2.8<br>(N=2) | 1.7<br>(N=2) | 1.5<br>(N=1) | 4.3<br>(N=2) | 22.2<br>(N=6) | * |
| Handicapped children receive services from your program but are not mainstreamed | 5.6<br>(N=1) | * | * | * | * | 0.9<br>(N=1) | * | * | 7.4<br>(N=2) | * |
| Not specified | 5.6<br>(N=1) | * | * | * | * | * | 4.5<br>(N=3) | 2.2<br>(N=1) | * | * |

## TABLE 6.5

## DISTRIBUTION OF THE NON-HEAD START SAMPLE FOR HANDICAPPING CONDITION BY MAINSTREAMING OPTIONS

| Mainstreaming Options | HANDICAPPING CONDITION | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Visually Impaired | Blind | Hearing Impaired | Deaf | Physically Handicapped | Speech Impaired | Health or Developmentally Impaired | Mentally Retarded | Specific Learning Disability | Seriously Emotionally Disturbed |
| | % of column | % of column | % of column | % of column | % of column | % of column | % of column | % of column | % of column | % of column |
| Total | 100.0<br>(N=1) | 100.0<br>(N=2) | 100.0<br>(N=1) | 100.0<br>(N=2) | 100.0<br>(N=56) | 100.0<br>(N=52) | 100.0<br>(N=29) | 100.0<br>(N=120) | 100.0<br>(N=21) | 100.0<br>(N=27) |
| Complete mainstreaming of handicapped child into a regular classroom (no supportive services provided) | * | * | * | * | 5.4<br>(N=3) | 11.5<br>(N=6) | * | 0.8<br>(N=1) | 4.8<br>(N=1) | 7.4<br>(N=2) |
| Complete mainstreaming of handicapped child into a regular classroom with supportive assistance provided by a specialist | * | 50.0<br>(N=1) | * | * | 1.8<br>(N=1) | 11.5<br>(N=6) | * | 0.8<br>(N=1) | 19.0<br>(N=4) | 14.8<br>(N=4) |
| Reverse mainstreaming in which normal children become part of a special education class | * | * | * | * | 5.4<br>(N=3) | 1.9<br>(N=1) | 3.4<br>(N=1) | 1.7<br>(N=2) | * | 3.7<br>(N=1) |
| Partial mainstreaming where handicapped children are in a special education class but go to mainstreamed classes for one or more regular classroom activities | * | * | * | * | 5.4<br>(N=3) | * | * | 0.8<br>(N=1) | * | 3.7<br>(N=1) |
| No mainstreaming available | 100.0<br>(N=1) | 50.0<br>(N=1) | 100.0<br>(N=11) | 100.0<br>(N=2) | 82.1<br>(N=46) | 75.0<br>(N=39) | 96.6<br>(N=28) | 95.8<br>(N=115) | 76.2<br>(N=16) | 70.4<br>(N=19) |

# TABLE 6.6

## DISTRIBUTION OF THE SAMPLE FOR SEVERITY LEVEL BY MAINSTREAMING OPTIONS FOR PROGRAM TYPE

| Mainstreaming Options | HEAD START SEVERITY LEVEL | | | | NON-HEAD START SEVERITY LEVEL | | | |
|---|---|---|---|---|---|---|---|---|
| | mild | moderate | severe | profound | mild | moderate | severe | profound |
| | % of column | % of column | % of column | % of column | % of column | % of column | % of column | % of column |
| Total | 100.0<br>(N=101) | 100.0<br>(N=151) | 100.0<br>(N=39) | 100.0<br>(N=13) | 100.0<br>(N=82) | 100.0<br>(N=136) | 100.0<br>(N=74) | 100.0<br>(N=29) |
| Complete mainstreaming of handicapped child into a regular classroom *(no supportive services provided)* | 39.6<br>(N=2) | 35.8<br>(N=51) | 41.3<br>(N=2) | 15.4<br>(N=2) | 12.2<br>(N=10) | 0.7<br>(N=1) | 2.7<br>(N=2) | * |
| Complete mainstreaming of handicapped child into a regular classroom with supportive assistance provided by a specialist | 54.3<br>(N=89) | 51.0<br>(N=77) | 46.0<br>(N=29) | 76.9<br>(N=10) | 11.0<br>(N=9) | 5.1<br>(N=7) | 1.4<br>(N=1) | * |
| Complete mainstreaming of handicapped children in a classroom where a regular classroom teacher and a special education teacher cooperatively work with all children *(a team arrangement)* | 0.6<br>(N=1) | 2.6<br>(N=4) | 1.6<br>(N=1) | * | * | * | * | * |
| Reverse mainstreaming in which normal children become part of a special education class | 1.2<br>(N=2) | 2.6<br>(N=4) | 6.3<br>(N=4) | * | 4.9<br>(N=4) | 0.7<br>(N=1) | 1.4<br>(N=1) | 6.9<br>(N=2) |
| Partial mainstreaming where handicapped children are in a special education class but go to mainstreamed classes for one or more regular classroom activities | 1.2<br>(N=2) | 6.6<br>(N=10) | 1.6<br>(N=1) | 7.7<br>(N=1) | 2.4<br>(N=2) | 2.2<br>(N=3) | * | * |
| Handicapped children receive services from your program but are not mainstreamed | 1.8<br>(N=3) | 0.7<br>(N=1) | * | * | * | * | * | * |
| Not specified or no mainstreaming available | 1.2<br>(N=2) | 0.7<br>(N=1) | 3.2<br>(N=2) | * | 69.5<br>(N=57) | 91.2<br>(N=124) | 94.6<br>(N=70) | 93.1<br>(N=27) |

non-Head Start programs. The non-Head Start programs, as relatively segregated programs, tend to be housed in facilities with their own support services.

TABLE 6.7

DISTRIBUTION OF THE SAMPLE FOR PROGRAM TYPE WHETHER THE CHILD IS MAINSTREAMED--AS REPORTED BY THE TEACHER

| PROGRAM TYPE | % of Row | Mainstreamed % of Row | Not Mainstreamed % of Row |
|---|---|---|---|
| Head Start | 100.0<br>(N=391) | 98.5<br>(N=423) | 1.5<br>(N=6) |
| Non-Head Start | 100.0<br>(N=321) | 14.6<br>(N=47) | 85.4<br>(N=306) |

While it is important to distinguish between the effects of programs, the effects of mainstreaming, and the effects of levels of severity, to a certain extent these effects can only be estimated from the given data. Since mainstreaming is confounded by program type (98% of all Head Start children were mainstreamed compared with only 14% of non-Head Start children), mainstreaming itself must be considered as a treatment effect which is present in Head Start and absent in non-Head Start.

*CLASS ENROLLMENT*

Table 6.8 presents average class enrollments for each program. As discussed earlier, the special education emphases are again reflected in the enrollment figures. Head Start children are predominately non-handicapped with an average of only 3.7 handicapped children per class. On the other hand, the non-Head Start children are predominately handicapped. They average 10.8 handicapped children in each class of 13 children. Children in the Head Start classrooms tend to more frequently be in classes with large enrollments (Table 6.9) than do the non-Head Start children who tend to be almost exclusively in classes with handicapped children.

## TABLE 6.8

## MEAN ENROLLMENTS FOR HANDICAPPED AND NON-HANDICAPPED CHILDREN BY PROGRAM TYPE

| | Program Type | |
|---|---|---|
| Children | Head Start Mean Per Class | Non-Head Start Mean Per Class |
| All children per class | 21.1 | 13.1 |
| Non-handicapped per class | 17.4 | 2.3 |
| Handicapped only per class | 3.7 | 10.8 |

### *YEARS OF SERVICE TO PRESCHOOL HANDICAPPED*

Table 6.10 shows the length of time each program has been providing services to preschool handicapped children. Almost half of the non-Head Start respondents (42.7%) are associated with a program which has been providing these services for more than 10 years. While 30 percent of the Head Start group has also been providing services for more than 10 years, the Head Start programs are more evenly distributed over the ranges identified.

## Staff Characteristics

Certain variables are important to successful progress of the child, and are indirectly related to services provided to the child by the program. These include teacher salary, level of education, training areas, and teaching experience.

### *EXPERIENCE WITH PRESCHOOL HANDICAPPED*

Teachers in both types of programs appear to have essentially similar backgrounds with preschool handicapped children. This is shown in Table 6.11. Only 17.8 percent of teachers for the non-Head Start sample and 10.2 percent of teachers for the Head Start sample have had little or no previous experience with handicapped preschoolers prior to the current program they are teaching in. Children in Head Start programs tend to have fewer teachers with less than one year experience (10.2% compared with 17.8% for children of

## TABLE 6.9

## DISTRIBUTION OF THE SAMPLE FOR NUMBER OF CHILDREN ENROLLED IN CLASS BY PROGRAM TYPE

| Enrollment | Program Type<br>Head Start<br>% of column | <br>Non-Head Start<br>% of column |
|---|---|---|
| 1 child only | 0.3<br>(N=1) | 1.6<br>(N=5) |
| 2 to 9 children | 1.8<br>(N=7) | 44.7<br>(N=144) |
| 10 to 19 children | 46.9<br>(N=183) | 35.5<br>(N=114) |
| 20 to 29 children | 36.3<br>(N=142) | 10.5<br>(N=34) |
| 30 to 39 children | 7.7<br>(N=30) | 6.3<br>(N=20) |
| 40 to 49 children | 6.7<br>(N=26) | 0.9<br>(N=3) |
| 50 or more children | 0.5<br>(N=2) | 0.9<br>(N=3) |

## TABLE 6.10

## DISTRIBUTION OF THE SAMPLE FOR LENGTH OF PROGRAM SERVICE TO HANDICAPPED PRE-SCHOOLERS

| Length of Service to Handicapped Pre-School Children | Program Type | |
|---|---|---|
| | Head Start % of column | Non-Head Start % of column |
| 1-2 years | 6.6<br>(N=26) | 2.8<br>(N=9) |
| 3-4 years | 23.2<br>(N=91 | 20.6<br>(N=66) |
| 5-7 years | 19.1<br>(N=75) | 26.8<br>(N=86) |
| 8-10 years | 21.2<br>(N=83) | 7.2<br>(N=23) |
| Over 10 years | 29.8<br>(N=117) | 42.7<br>(N=137) |

## TABLE 6.11

## DISTRIBUTION OF THE SAMPLE FOR NUMBER OF YEARS WORKING WITH PRE-SCHOOL HANDICAPPED CHILDREN

| Years of Teacher Experience Working with Handicapped Pre-School Children | Program Type | |
|---|---|---|
| | Head Start % of column | Non-Head Start % of column |
| Less than 1 year | 10.2<br>(N=40) | 17.8<br>(N=57) |
| 1-2 years | 23.5<br>(N=92) | 26.5<br>(N=85) |
| 3-5 years | 33.5<br>(N=131) | 34.3<br>(N=110) |
| Over 5 years | 32.7<br>(N=128) | 21.5<br>(N=69) |

non-Head Start teachers) and more teachers with five years or more experience (32.7% compared with 21.5%). In other words, the element of teaching experience with the handicapped preschool child tends to favor Head Start. This may reflect age differences of teachers, rates of personnel turnover, or other differences related to characteristics of the programs themselves.

### *SALARY*

Teacher salary is shown in Table 6.12. There are pronounced differences in salary levels for teachers working with the sample of Head Start and non-Head Start children. Very few Head Start children and teachers (4.4%) received a salary in excess of $12,000 while 16.1 percent of non-Head Start children had teachers who received salaries at that level. Many Head Start children had teachers (41.5%) who received less than $5,000 while only 6.6 percent of non-Head Start children had teachers who were paid that amount. The difference is best illustrated by the fact that 71.2 percent of Head Start children had teachers who received less than $7,000 while 74.4 percent of non-Head Start children had teachers who received more than $7,000.

### *EDUCATION LEVEL*

Table 6.13 presents the educational levels of teachers for the sampled handicapped population. Dramatic differences are evident by program type. Most of the non-Head Start sample of teachers are college graduates (80.1%) compared with only about one-third of the Head Start sample (37.6%). The modal educational level (most frequent) for Head Start teachers is "some college," for non-Head Start teachers it is "post graduate study." Only 3.4 percent of the non-Head Start sample have a high school degree as their highest level of educational attainment compared with 10.8 percent in Head Start.

This dramatic difference in level of education is coupled with additional differences in specialization areas. Table 6.14 shows that almost half of the non-Head Start teachers (45.3%) have degrees in special education, compared with 5.7 percent of Head Start teachers. The most common degree area in Head Start is early

## TABLE 6.12

## DISTRIBUTION OF THE SAMPLE FOR SALARY RANGE OF TEACHER BY PROGRAM TYPE

| Teacher Salary Range | Program Type | |
|---|---|---|
| | Head Start | Non-Head Start |
| $5000 or less | 41.5<br>(N=162) | 6.6<br>(N=21) |
| $5000 to $7000 | 29.7<br>(N=116) | 19.0<br>(N=60) |
| $7000 to $10,000 | 17.0<br>(N=70) | 35.4<br>(N=112) |
| $10,000 to $12,000 | 6.4<br>(N=25) | 22.8<br>(N=72) |
| Over $12,000 | 4.4<br>(N=17) | 16.1<br>(N=51) |

## TABLE 6.13

## DISTRIBUTION OF THE SAMPLE FOR TEACHER'S HIGHEST LEVEL OF EDUCATION BY PROGRAM TYPE

| Level of Teacher's Education | Program Type | |
|---|---|---|
| | Head Start % of column | Non-Head Start % of column |
| Some high school | 3.1<br>(N=12) | * |
| High school graduate | 7.7<br>(N=30) | 3.4<br>(N=11) |
| Some college | 41.7<br>(N=163) | 13.4<br>(N=43) |
| Associate degree | 10.0<br>(N=39) | 3.1<br>(N=10) |
| Bachelor's degree | 21.2<br>(N=83) | 31.2<br>(N=100) |
| Postgraduate study | 16.4<br>(N=64) | 48.9<br>(N=157) |

## TABLE 6.14

## DISTRIBUTION OF THE SAMPLE FOR TEACHER'S AREA OF SPECIALIZATION

| Area of Teacher's Specialization | Program Type | |
|---|---|---|
| | Head Start % of column | Non-Head Start % of column |
| Special Education | 5.7 (N=21) | 45.3 (N=143) |
| Early Childhood Development | 27.5 (N=102) | 18.4 (N=58) |
| Other | 13.2 (N=49) | 22.5 (N=71) |
| Not Applicable | 53.6 (N=199) | 13.9 (N=44) |

childhood education. This educational level and specialization information indicates that non-Head Start programs tend to employ college educated special education personnel, while Head Start programs tend to employ non-college degreed teachers. While this indicates significant differences in the type of teaching staff, it may also reflect even more important differences in the programs themselves. Table 6.15 shows the extent of other formal classroom training opportunities (such as non-degree related training programs). Head Start shows that 46 percent of the sample children are served by staff not receiving other formal training, but non-Head Start programs show comparable "no training" rates (40.2%). The major difference, of course, lies in the fact that most of the non-Head Start teachers are already "trained."

## TABLE 6.15

## DISTRIBUTION OF THE SAMPLE FOR TEACHERS WITH OTHER FORMAL CLASSROOM TRAINING BY PROGRAM TYPE

| Other Formal Training | Program Type<br>Head Start<br>% of column | <br>Non-Head Start<br>% of column |
|---|---|---|
| None | 46.0<br>(N=180) | 40.2<br>(N=129) |
| Child Development Associate | 30.0<br>(N=121) | 4.7<br>(N=15) |
| Other | 23.0<br>(N=90) | 55.1<br>(N=177) |

### *CERTIFICATION*

Table 6.16 shows programs with State certified teachers. One-fourth as many Head Start children are served by teachers (14.1%) who are certified by their State education agency as are children served by non-Head Start teachers (56.4%). Again, this difference may reflect more important and overriding program differences, and is discussed in more detail later.

## TABLE 6.16

## DISTRIBUTION OF CHILDREN TAUGHT BY TEACHERS WITH STATE BOARD OF EDUCATION CERTIFICATION TO TEACH THE HANDICAPPED BY PROGRAM TYPE

| Certification | Program Type<br>Head Start<br>% of column | <br>Non-Head Start<br>% of column |
|---|---|---|
| Certified | 14.1<br>(N=55) | 56.4<br>(N=181) |
| Not Certified | 85.9<br>(N=336) | 43.6<br>(N=140) |

## Attitudes and Values of Teachers

Four measures of attitudes and values toward education and mainstreaming and toward the specific program in which the teacher was employed were used. Two measures were obtained from two sets of scales contained in the Schaefer Teacher Inventory. The "General" scales assess attitudes towards parents, conferences, and roles of the parents and home environment in the child's learning. The "Education" scales assess attitudes toward authority, learning styles, and discipline. A third measure is the Schaefer Teacher Perception of Center Environment which assessed the teacher's perceptions of organizational support, control, and climate. The fourth measure is a nine-item Likert-type rating of attitudes towards mainstreaming handicapped children. Differences between programs have already been detailed in terms of selection biases for the population served, family characteristics, and certain demographic characteristics of teachers. To the extent that teacher attitudes, which may affect developmental progress of the child, differ with respect to program type an investigation of treatment effects of the program should consider teacher attitudes as one component of the "treatment" process. Additionally, teacher attitudes themselves may be highly important in determining the effectiveness of their instruction and thus, the development of the child. The following review is intended to discuss these attitudes by type of program.

### *EFER TEACHER INVENTORY*

Table 6.17 shows the mean scores of each of the Schaefer Teacher Inventory Scales by program type. While there are certain mean pretest differences between programs, there are very few differences in any of these scales from pretest to posttest. That is, attitudinal differences between Head Start and non-Head Start staff at the pretest were carried through as posttest differences as well. Over the course of the study, the relative attitudinal dispositions of Head Start and non-Head Start staffs remained relatively constant.

# TABLE 6.17

## MEAN SCORES OF TEACHER ATTITUDES BY PROGRAM TYPE

| | | | Program Type | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Head Start (N=390) | | | | | Non-Head Start (N=322) | | | | |
| Attitude Scales | Possible Scores | | Pre-Test | | Post-Test | | | Pre-Test | | Post-Test | | |
| | Minimum | Maximum | Mean Score | Standard Deviation | Mean Score | Standard Deviation | Change in Mean Score | Mean Score | Standard Deviation | Mean Score | Standard Deviation | Change in Mean Score |
| General Beliefs: | | | | | | | | | | | | |
| Usefulness of Parent-Teacher Conferences | 3 | 15* | 4.4 | 1.9 | 4.4 | 2.1 | 0.0 | 4.2 | 1.7 | 4.4 | 1.9 | 0.2 |
| Importance of Home Learning | 3 | 15* | 11.5 | 2.7 | 11.9 | 2.9 | 0.4d | 11.1 | 2.7 | 11.1 | 2.8 | 0.0 |
| Difficulty with Parents of Children with Problems | 3 | 15* | 6.1 | 3.0 | 6.5 | 2.9 | 0.4c | 6.9 | 2.7 | 7.1 | 2.9 | 0.2 |
| Reluctance to Teach Parents | 3 | 15* | 5.0 | 2.6 | 5.3 | 2.5 | 0.3c | 5.2 | 2.5 | 5.5 | 2.4 | 0.3c |
| Skill and Comfort with Parents | 3 | 15* | 13.3 | 1.8 | 13.0 | 2.0 | -0.3c | 12.9 | 2.0 | 13.0 | 1.9 | 0.1 |
| Parents' Appreciation of Teachers | 3 | 15* | 12.9 | 2.1 | 12.3 | 2.6 | -0.6 d | 6.9 | 2.9 | 7.1 | 2.9 | 0.2 |
| Discomfort with Parents | 3 | 15* | 5.3 | 2.6 | 5.3 | 2.4 | 0.0 | 5.7 | 2.3 | 5.9 | 2.6 | 0.2b |
| Educational Beliefs: | | | | | | | | | | | | |
| Children are Basically Good | 3 | 15* | 12.5 | 2.3 | 12.4 | 2.2 | -0.1 | 11.4 | 2.3 | 11.0 | 2.9 | 0.4c |
| Children Learn Actively | 3 | 15* | 10.8 | 3.2 | 10.1 | 3.2 | -0.7 d | 8.4 | 3.4 | 8.9 | 3.3 | 0.5d |
| Absolute Teacher Authority | 4 | 20* | 11.6 | 4.4 | 11.3 | 4.0 | -0.3 | 10.1 | 4.3 | 10.6 | 4.1 | 0.5b |
| Absolute Parent Authority | 3 | 15* | 11.1 | 4.1 | 11.1 | 3.9 | 0.0 | 9.5 | 3.8 | 9.9 | 3.9 | 0.4 |
| Equal Treatment of Children | 5 | 25* | 17.6 | 5.6 | 16.4 | 5.4 | -1.2 d | 14.0 | 5.5 | 13.6 | 5.6 | 0.4c |
| Irritability with Children | 3 | 15* | 8.5 | 2.6 | 9.0 | 2.7 | 0.5 d | 8.9 | 2.7 | 9.3 | 2.7 | 0.4 |

* High scores reflect more agreement with scale concept; low scores reflect less agreement with scale concept.

a - Too few cases to establish statistical significance
b - significant at .1 level
c - significant at .05 level
d - significant at .01 level

**Levels of significance established for changes within programs rather than between programs.**

Those Schaefer scales which did indicate initial (and persistent) Head Start/non-Head Start differences included the sixth scale of the "general beliefs" battery (parents' appreciation of teachers; Head Start/non-Head Start pretest mean difference = 6.0, posttest mean difference = 5.2) and on the second and fifth scales of "educational beliefs" battery (children learn actively and children should be treated equally; Head Start/non-Head Start pretest mean differences = 2.4 and 3.6, respectively; posttest mean differences = 1.2 and 2.8, respectively). Specifically, these data imply that Head Start teachers felt more appreciated by parents, were more inclined to believe that children learn actively, and were more inclined to believe in equal treatment of all children relative to their non-Head Start counterparts. It should be noted, however, that with respect to the "equal treatment" scale, Head Start teachers exhibited a significant change in this attitude over the course of the study of 1.2 points indicating a decline in the strength of this particular belief. A similar, but less notable, change in this belief was also evidenced among non-Head Start teachers.

## SCHAEFER TEACHER PERCEPTION OF CENTER ENVIRONMENT

The mean scores for the three scales of this measure are presented in Table 6.18. The participation-non-participation scales show the largest mean pretest differences with Head Start teachers consistently indicating a higher feeling of participation in center activities than non-Head Start teachers. Again, however, there are essentially no pre-post changes for either group.

## ATTITUDES TOWARDS MAINSTREAMING

The Teacher Attitude and Opinion Interview was extensively discussed in the Interim Technical Report (Rader, 1978). During the pretest analysis it was determined that two subscales developed by Applied Management Sciences appeared to measure different attitudes and it was recommended that they be treated as independent measures. Scale I measures attitude towards the concept of mainstreaming and Scale II assesses the perception of constraints to mainstreaming efforts. Table 6.19 presents the mean scores for both scales (attitude towards mainstreaming and constraints) by program type. Substantial pretest differences are present. Head Start teachers show a lower mean pretest score (22.3) compared with non-Head Start (42.7) on Scale I. A score of 52 would indicate a neutral attitude (neither positive nor negative) towards mainstreaming of handicapped children, therefore both Head Start and non-Head Start teachers show positive overall attitudes towards mainstreaming, with Head Start teachers showing a much stronger positive attitude.

On Scale II, a briefer scale which measures perceived constraints to mainstreaming, Head Start shows a higher mean pretest score (28.0) compared with non-Head Start (21.6). Again, however, both groups are above the mean neutral score (20) indicating that both Head Start and non-Head Start teachers see few constraints to mainstreaming; Head Start teachers more strongly believe there are few constraints, however.

Differential pre-post changes in these attitudes are present. Generally, Head Start teachers show minimal changes (+2.7 on Scale I

# TABLE 6.18

## MEAN SCORES OF TEACHER PERCEPTION OF THE ENVIRONMENT ATTITUDES BY PROGRAM

| | | | Program Type | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Head Start (N=390) | | | | | Non Head Start (N=3[illegible]) | | | | |
| Attitude Scales | Possible Scores | | Pre-Test | | Post-Test | | | Pre-Test | | Post-Test | | |
| | Minimum | Maximum | Mean Score | Standard Deviation | Mean Score | Standard Deviation | Change in Mean Score | Mean Score | Standard Deviation | Mean Score | Standard Deviation | Change in Mean Score |
| Center Environment<br>Internal Support - Non Support: | | | | | | | | | | | | |
| Colleague Support | 3 | 15* | 13.2 | 2.1 | 13.0 | 2.3 | -0.2 b | 13.0 | 2.1 | 13.0 | 1.9 | 0.0 |
| **Positive Colleague** Relationship | 3 | 15* | 13.6 | 2.1 | 13.2 | 2.3 | -0.4 d | 13.2 | 2.5 | 13.0 | 2.1 | 0.2 |
| Administrative Support for Teachers' Contacting Parents | 3 | 15* | 14.3 | 1.6 | 14.0 | 2.0 | -0.3 d | 13.5 | 2.4 | 13.3 | 2.5 | 0.2 |
| Administrative Support for Parents' Contacting Teachers | 3 | 15* | 13.5 | 2.2 | 13.2 | 2.5 | -0.3 c | 12.6 | 2.1 | 12.2 | 2.5 | 0.4 d |
| Participation - Non Participation: | | | | | | | | | | | | |
| Horizontal Communication | 3 | 15* | 11.8 | 3.2 | 12.0 | 3.1 | 0.2 | 10.7 | 3.2 | 10.6 | 3.3 | 0.1 |
| Shared Decision Making | 3 | 15* | 12.4 | 2.9 | 12.3 | 2.9 | -0.1 | 11.6 | 2.3 | 11.1 | 3.6 | 0.5 d |
| Participation in Rule Formation | 3 | 15* | 11.9 | 3.3 | 11.8 | 3.2 | -0.1 | 9.4 | 3.8 | 9.1 | 4.1 | -0.3 |
| Control - Compliance | | | | | | | | | | | | |
| Teacher Powerlessness | 3 | 15** | 5.8 | 3.2 | 6.2 | 3.1 | 0.4 c | 5.9 | 2.8 | 6.7 | 3.2 | 0.8 d |
| Principal Feedback About Teacher Performance | 3 | 15* | 11.6 | 3.6 | 11.0 | 3.7 | 0.6 d | 10.4 | 3.2 | 9.8 | 3.5 | 0.6 d |
| Teacher Evaluation of Own Performance | 3 | 15* | 12.8 | 2.7 | 12.6 | 3.0 | 0.2 | 11.4 | 3.2 | 10.9 | 3.6 | 0.5 c |
| Teacher Helping Other Teachers | 3 | 15* | 13.5 | 2.3 | 13.3 | 2.4 | 0.2 b | 13.1 | 2.6 | 12.8 | 2.6 | 0.3 c |

* High scores reflect more positive attitudes; low scores reflect more negative attitudes.

** High scores reflect more negative attitudes; low scores reflect more positive attitudes.

a - Too few cases to establish statistical significance
b - significant at .1 level
c - significant at .05 level
d - significant at .01 level

## TABLE 6.19

## MEAN SCORES OF TEACHER ATTITUDES TOWARD MAINSTREAMING BY PROGRAM TYPE

| | | | Head Start (N=390)[2/] | | | | | Non-Head Start (N=322)[2/] | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Attitude Scale[1/] | Possible Scores | | Pre-Test | | Post-Test | | | Pre-Test | | Post-Test | | |
| | Minimum | Maximum | Mean Score | Standard Deviation | Mean Score | Standard Deviation | Change in Mean Score | Mean Score | Standard Deviation | Mean Score | Standard Deviation | Change in Mean Score |
| General Attitude Toward Mainstreaming (Scale I) | 13 | 91* | 22.3 | 4.8 | 25.0 | 5.9 | $2.7_c$ | 42.7 | 17.2 | 33.2 | 12.9 | $9.5_d$ |
| Perceived Constraints Toward Mainstreaming (Scale II) | 5 | 35** | 28.0 | 12.4 | 28.8 | 11.4 | .8 | 21.6 | 4.7 | 25.8 | 4.6 | $4.2_c$ |

[1/] Items comprising scales are described in Appendix M.

[2/] Number of children whose teachers completed Scales I and II.

*Low scores reflect more positive attitudes; high scores reflect more negative attitudes.

**Low scores reflect more perceived constraint; high scores reflect less perceived constraint.

a-Too few cases to establish statistical significance
b-Significant at .1 level
c-Significant at .05 level
d-Significant at .01 level

and +0.8 on Scale II). Non-Head Start teachers, however, show substantial changes in mean attitude scores on these scales (-9.5 on Scale I and +4.2 on Scale II). Each of these changes more closely aligns the attitude of non-Head Start teachers with the attitude of Head Start teachers. That is, attitudes towards mainstreaming (already positive) become more strongly positive and perceived constraints become fewer for the non-Head Start teachers.

To the extent that attitudes towards mainstreaming have any affect on the teacher's capability to work with handicapped youngsters in a mainstream setting, then those positive attitudes and the demonstrated changes in the non-Head Start group are important variables.

## SUMMARY AND RECOMMENDATIONS

Attitudes, values, and characteristics of teachers have no less importance in determining the eventual effects of a program than do the general characteristics of the program of services received by the child and family. To the extent that programs select teachers with different characteristics, or by virtue of low rates of personnel turnover they modify certain characteristics of their teachers, then the resulting "effects" of the respective programs are also modified. Where these differences can be detected, it may be important to examine their systematic effects. Such differences were found in some key characteristics of Head Start/non-Head Start teaching staff for the study sample. These key characteristics are summarized below.

- Program characteristics: Major differences are present which differentially characterize the preschool handicapped children in Head Start and non-Head Start programs.
  - .. Head Start children are more frequently mainstreamed and are enrolled in larger (total enrollment) programs with larger classes and fewer handicapped classmates.
  - .. Head Start programs have a much lower per pupil expenditure than non-Head Start programs.

  - Non-Head Start children are more frequently enrolled in programs with a long history of services to preschool handicapped children.

- Staff characteristics: Again, substantial differences are present with respect to the teaching staff for Head Start and non-Head Start children.
  - Teacher salaries, education levels, and certification variables all heavily favor children enrolled in non-Head Start programs.
  - Years of previous experience with preschool handicapped children favors the children in Head Start.

- Head Start and non-Head Start children were served by teachers who evidenced generally comparable general educational beliefs and values, although Head Start teachers were slightly more inclined to feel appreciated by parents, to believe that children learn best through active classroom participation, and to believe all children should be treated equally in the classroom.

- Head Start children were served by teachers who were more positively oriented toward the practice of mainstreaming and perceived fewer constraints in its implementation than were non-Head Start children. However, non-Head Start teachers, over the course of the study, evidenced changes in these attitudes and perceptions that brought them more in line with the positive orientations of Head Start teachers.

# 7

## STUDY FINDINGS:
## THE PRESCOTT-SRI CHILD OBSERVATION SYSTEM

### Classroom Integration

The Prescott-SRI Child Observation System was selected to be used in collecting data related to one major outcome variable of the study: children's behavior and social interactions. This variable (or set of variables) was specified as a possible indicator of the impact of a Head Start or non-Head Start program may have upon the handicapped children it serves. Additionally, the measure provides data which help to describe the differential treatment effects of programs. For example, different types of programs probably enable or encourage different kinds of child behaviors to occur at different frequencies. These differences in rates of occurrence may be related to program variables, such as pupil/teacher ratio or the ratio of handicapped to non-handicapped children in a given class. Complete pretest and posttest observation data were collected on 707 handicapped children in the Head Start and non-Head Start samples as well as a group of approximately 200 children who were non-handicapped.[1]

The purpose of this chapter is 1) to describe the procedures utilized in reducing the number of variables to be considered for analysis; 2) to identify group differences between the Head Start and non-Head Start study samples based upon the Prescott-SRI data; and 3) to review certain decisions related to the Prescott-SRI Analysis.

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[1] The non-handicapped group consisted of 200 different children for the pretest and posttest samples. However, both samples were essentially selected at random from participating Head Start and non-Head Start programs as well as some preschool child development centers in the Washington, D.C. metropolitan area.

## Description of the Prescott-SRI Child Observation System

This observation system is used to record the nature and kind of activities and social interactions in which children engage within the preschool environment. The Prescott-SRI Child Observation System is an especially complex and comprehensive system which requires coding a specific child's (focus child) behavior every 12 seconds during two separate 20-minute observation periods. The coding of child behaviors on the Prescott-SRI occurs across three dimensions of behavior:

### *CHILD ACTIVITY CODES*

Activity codes occur in four general categories (Integrates, Thrusts or Initiates, Receives, and Defends or Responds), each of which contain several subcategory classifications. Within the continuum of possible categories for these four areas, there are 54 child activity codes. These child activity codes are presented and described fully in Table D.1 which is contained in Technical Memorandum No. 4 in Appendix D.

### *OBJECT OF THE CHILD'S ATTENTION*

The objects of a child's attention in a given behavioral setting are designated by the following codes:

A - an adult

C - another child

G - a group of children with or without adults

D - a handicapped child or group of children including one or more handicapped children

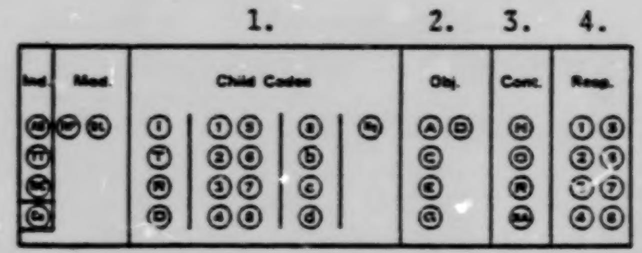
E - environment.

Object code "D" was modified from the original Prescott-SRI System to take into account the specific focus of this particular evaluation.

*CONTINUITY OF ACTIVITY*

"Continuity of activity" refers to whether the focus child was involved in an activity designated as new or ongoing, or whether the child was returning to a previous activity, or was not involved in any activity at all.

These three behavior dimensions are represented in the recording booklet as illustrated below:



1. = Child Activity Codes
2. = Object Codes
3. = Continuity codes

Column (4) allows for the recording of the specific child response, if applicable.

For standardized recording observers were provided with a beeper timed at 12 second intervals to signify recording points. In addition, at the end of each 20-minute observation period, the observer completed an 11-item summary of more general behaviors displayed during the 20 minutes. (Table E.4 contained in Technical Memorandum No. 5 in Appendix E presents the summary coding forms.)

## Issues of Data Analysis and Reduction

Because the Prescott-SRI is being used both as a secondary dependent variable to show the effects of program treatments on certain child behaviors, and also could be used as an independent variable to show the extent to which certain child behaviors can affect growth and development (as measured by the Alpern-Boll), there are these specific issues for consideration:

- reduction of the large quantity of observation codes to a small group (or a single indicator);
- adequacy of reliability from observer to observer or session to session; and
- identification of child codes which distinguish between program types.

*DATA REDUCTION*

Data collected utilizing the Prescott-SRI yielded over 780 specific individual variables which relate to the nature and extent of social interactions and behaviors of handicapped children with their handicapped peers, non-handicapped peers, and adults. Since it is not feasible to utilize each individual variable, and since the measure of behaviors is in the form of frequency counts, there were two major data reduction tasks:

- modify the nature of the measure for comparison purposes, and
- reduce the quantity of variables.

Each of these activities is addressed in greater detail in Technical Memorandum No. 4 and Technical Memorandum No. 5, respectively, contained in Appendices D and E. For clarity, these activities are summarized below.

Comparability: Because the child observation data collected by this instrument is a frequency count for specific coded behaviors, the data are only meaningful relative to the frequency counts for the same behavior code by other children. Transformation of these data to standardized scores would allow the data to more easily accommodate the analyses which require the use of an interval measure. In order to insure comparability of the frequency counts (across behavior codes, and across other variables as well as other children), the frequency counts were transformed into standardized (Z) scores using the data from a sample of non-handicapped children. The mean and standard deviation of each selected observation code from the non-handicapped sample were used to transform the frequency count for each handicapped child into a standardized Z score using the equation:

$$\underset{\text{(for specific behavior code)}}{Z} = \frac{\underset{\text{(for Handicapped Child)}}{\text{Frequency Count}} - \underset{\text{(for non-Handicapped sample)}}{\text{Mean Frequency}}}{\underset{\text{(for the non-handicapped sample)}}{\text{Standard Deviation}}}$$

This transformation of the data provides a standardized score for each observation code which reflects the performance of the handicapped child in reference to the non-handicapped sample and also allows for comparability across behavior codes and other key variables such as handicapping condition.

Key Variables: The first step in the process of identifying key variables in order to reduce the quantity of variables was to review the frequency distribution for all coded frames. These frames included all child activity, continuity, and object codes which were recorded for each child in the sample. If the rate of occurrence of any child behavior code was 100 or greater, that particular code was retained for the next variable reduction step. Child behavior codes with frequency counts of less than 100 were eliminated from consideration for the following reasons: (1) low frequencies were not sensitive to change, and (2) inclusion of low frequencies of child behavior codes could cause the data to be especially vulnerable to any systematic bias which might exist.

A total ot 87 child behavior codes occurred with a frequency of 100 or more times. These 87 behavior codes were further examined for differences by handicapping condition and a total of 47 child activity and object codes were retained. These behavior codes either occurred with sufficient frequency, showed differences in frequencies by handicapping conditions, or were consistent with the general body of knowledge about behaviors of children with specific handicapping conditions. These selected codes are discussed in more detail in Technical Memorandum No. 5 in Appendix E.

The final data reduction procedures involved discriminant analysis to identify key variables differentiating programs (discussed later in this chapter) and pre-post factor analysis to determine construct reliability and to develop factor scores for the Prescott-SRI data. As discussed in detail in Technical Memorandum No. 4 (Appendix D), two factors were identified and showed excellent consistency from pretest to posttest:

| | |
|---|---|
| Factor 1: | Receiving Interaction (Attention and Assistance) from Adult vs. Object Oriented Activity. |
| Factor 2: | Initiated Positive Activity and Attention to Another Child vs. Passive or Negative Attention. |

The Prescott-SRI child codes which load on these factors were weighted by their factor coefficients and factor scores were developed for these two constructs.

### *RELIABILITY*

As previously mentioned, the Prescott-SRI is an unusually complex and comprehensive instrument. Observer training required an intensive seven-to-ten-day training session with a trainer/trainee ratio of 1/6. These sessions included familiarization with the coding system, practice recording child's behavior in preschool classrooms and day care centers, coding practice with video-tapes especially developed for the system, and frequent reliability checks made throughout the training process. The final criterion for certification on the Prescott-SRI was a three-hour exercise in which trainees coded video-taped sequences of children's behavior. Trainees were required to meet the .75 trainer/trainee reliability level in order to be qualified to collect observation data using this system. Because this study required both detailed information and good reliability, and since children's pretest behaviors are to be compared with their posttest behaviors, it is crucial that reliability be maintained consistently across observers. Poor reliability could dramatically affect the pretest-posttest frequencies of codes by handicapping conditions.

Technical Memorandum No. 4 in Appendix D describes the sample, design and methodology for determining reliability of the Prescott-SRI data. A frame-by-frame analysis of 50 paired observers showed for all possible coding combinations, that 100 percent agreement on these coding combinations was achieved on 66.4 percent of all paired frames. When child codes only were compared, 81.9 percent agreement was achieved. Treating the frequency of occurrence of each of the key 47 child codes as item scores, the reliability among the 50 paired observers exceeded r = .69 on all but six child codes. Overall, the observer reliability for the Prescott-SRI was deemed excellent.

Further, the posttest discriminant analysis and factor analysis identified virtually identical child codes and factor constructs. The marked comparability of factor loadings from pretest to posttest and joint identification of key child codes differentiating program type lends credibility to the general construct reliability of the Prescott-SRI.

### *PROGRAM DIFFERENCES*

The Prescott-SRI contains over 780 usable codes for describing the behavior of the observed child in the program environment. As previously discussed, there are identifiable differences between Head Start and non-Head Start programs with respect to certain variables which can be expected to contribute to possible differences in the program environments. The level of education and salary of the teachers, for example, may result in teachers who structure their classrooms differently, encourage different levels of independence on the part of the child, or allow differing levels of adult-child interactions. An important difference in the programs which has already been partially discussed is the mainstream nature of the Head Start programs compared with the more restrictive "special education" emphasis of the non-Head Start programs. The non-Head Start classrooms are comprised predominately of handicapped children and there is little opportunity for child-to-child interactions of a mainstream nature in these programs. Because the Prescott-SRI contains codes for observing the frequency of interaction between handicapped and non-handicapped children, and because the availability of non-handicapped children differs so strongly (Head Start programs have many more non-handicapped children available), there is a strong indication to believe that the child interaction frequencies for some codes will vary substantially.

The 13 child code variables identified by both the pretest and posttest discriminant functions are summarized in Table D.6 in Technical Memorandum No. 4 (Appendix D). For purposes of clarity the description of the code variables also reflects the directionality of differences between programs. Tables 7.1 through 7.6 present the mean rating scores for the summary codes and the standardized Z scores for all other codes by program type and handicapping condition for all of these 13 key child activity codes. These tables illustrate differences in mean frequencies for these behavior codes. To the extent that the mean standardized scores are different from zero they also provide a referent with respect to the non-handicapped population. A superficial review shows that child behavior codes for the non-Head Start programs more often have large differences from zero than do Head Start programs (38 codes compared with 6, respectively). In general, this indicates that the frequency of these behaviors for handicapped children in Head Start more nearly approximates the frequency of occurrence for non-handicapped children than does the frequency of occurrence for children in non-Head Start programs. In other words, the Head Start handicapped children are more like the non-handicapped sample (with respect to these 13 identified key variables) than they are the non-Head Start sample.

Three dimensions were evident within the Prescott-SRI child behavior codes that were identified by the discriminant function as differentiating between types of programs. These dimensions are:

- class composition (child/teacher ratio and handicapped to non-handicapped ratio)
- classroom activity structure (open, closed)
- social integration of handicapped children (mainstreaming).

These three dimensions are interrelated and it is not possible to explain the frequency of specific child behaviors strictly in terms of any one of these dimensions. However, in some cases, a child's behavior appears to be more related to one dimension than the other two. For example, the handicapped children in Head Start programs tend to be less frequently involved in open-ended, expressive group activities with their attention directed towards adults than do the handicapped non-Head Start children. A possible explanation could be attributed to Head Start class composition which includes fewer adults than non-Head Start programs. In the case where Head Start handicapped children are less often involved in interactions with other handicapped children, it would be explained by the ratio of handicapped to non-handicapped children which in most Head Start programs is much lower than in non-Head Start programs. Similarly, in non-Head Start programs there is a higher frequency of handicapped children interacting with handicapped peers, since the classroom composition usually reflects only handicapped peers.

When child behavior codes were examined in terms of the dimension of social integration for handicapped children, several child behavior codes seemed reflective of this construct. Head Start handicapped children are more often involved in structured group activities with objects as the focus of their attention than are handicapped children in non-Head Start programs. The data indicate the frequency of group involvement for Head Start handicapped children more closely approximates the mean for the "normal" sample (the Z scores are very close to zero). Head Start handicapped children may indeed be more like their non-handicapped peers than different. However, this may raise the question of how severely involved the Head Start handicapped children are. On the other hand, this finding could support the premise of mainstreaming and the positive impact upon handicapped children gained by their social integration with normal peers.

The finding that Head Start handicapped children received more playful intrusions from non-handicapped peers than those focus children in non-Head Start programs is possibly indicative of social integration being achieved by handicapped children. It could also be explained, at least partially, by the fact that Head Start programs have many more non-handicapped peers available. In general, few, if any, non-handicapped children were integrated within non-Head Start programs.

The frequency of occurrence of both structured group activities and open-ended activities was more similar to the non-handicapped sample (Z scores are very close to zero) for Head Start children. Non-Head Start children on the other hand had substantially fewer occurrences of both behavior codes. The question of how such activity structure affects the behaviors of children is not always clear. However, in Head Start classes there appears to be more opportunity for children to be self-directed and to initiate activities and interactions in a less rigidly structured, teacher-controlled environment. In classes where there is more teacher directed activity, the dimension of child control over the environment and his or her own reactions to and behaviors within it, are subject to more defined parameters. The nature and number of open-ended (expressive) vs. closed or structured activities available for children to become involved in is possibly determined by whether the program structure itself is open or closed. This availability of opportunity in turn affects the behaviors children exhibit in the preschool environment. Head Start programs, as a group, appear to have a greater range of open-closed activities compared with non-Head Start programs which simply have fewer of both kinds.

There are few marked differences by handicapping condition. Object Code D (summation of all frames in which the focus child's attention was directed at a handicapped child or a group including a handicapped child) and Individual Child Code 1 (child attends to self--withdraws completely) show fairly substantial differential program effects by handicapping condition. Speech impaired, health or developmentally impaired and the combined group of learning disabled and emotionally disturbed (Tables 7.2., 7.3 and 7.5, respectively) all show very small gains in non-Head Start which are comparable to those gains shown by Head Start or they show very slight losses on Individual Child Code 1. The other handicap categories, however, show remarkably large Z score gains in the non-Head Start group (.5 to 1.3 Z score units) and more modest gains in Head Start group.

## SUMMARY AND RECOMMENDATIONS

While the Prescott-SRI is an especially complex and comprehensive observation system, in this study the instrument has shown excellent reliability both on an interrater basis and across identifiable constructs. Factor scores were developed to assess treatment effects and statistical adjustments will be made for identified pretest differences (age, sex, etc.). The distribution of mean scores on the 13 key variables which differentiated programs (with 85% accuracy) also showed differences on certain child codes by handicapped condition, verifying the need of conducting handicap-specific analyses.

- Inter-observer Reliability was especially high both for frame by frame correspondence and for child code frequency counts.
- Construct congruence was excellent, based on the replicability of discriminant functions and factor analyses.
- Significant variations by handicapping condition were present indicating a need for handicap - specific analyses.
- Overall, the behaviors of the Head Start sample of handicapped children tended to more closely approximate the behaviors of non-handicapped children.
- There was little evidence of negative, hostile, or disruptive behavior either initiated by or directed toward handicapped children (regardless of program).

## TABLE 7.1

## KEY PRESCOTT-SRI FRAMES INCLUDED IN BOTH PRETEST AND POSTTEST DISCRIMINANT FUNCTIONS FOR CHILDREN IDENTIFIED AS PHYSICALLY HANDICAPPED

Z-Scores

| Frame | Description | Head Start (N=69) | | | Non-Head Start (N=51) | | |
|---|---|---|---|---|---|---|---|
| | | Pretest | Posttest | Mean Change | Pretest | Posttest | Mean Change |
| Summary Code 2 | Extent of participation and involvement (1 = low; 5 = high) | 3.630 | 3.761 | .131 | 3.135 | 3.491 | .055 |
| Summary Code 5 | Affect (1 = distressed; 5 = happy) | 3.529 | 3.413 | -.116 | 3.126 | 3.593 | .167 |
| Summary Code 7 | Involvement with other children (1 = avoids; 5 = seeks out involvement) | 3.145 | 3.239 | .094 | 3,000 | 2.694 | -.306 |
| Summary Code 8 | Involvement with handicapped children (1 = avoids; 5 = seeks out involvement) | 2.101 | 2.609 | .507 | 4.315 | 4.917 | .603 |
| Object Code A | Summation of all frames in which the focus child's attention was directed at an adult | .331 | .222 | - .109 | 1.023 | 1.749 | .726 |
| Object Code C | Summation of all frames in which the focus child's attention was directed at another child | .031 | - .235 | - .266 | -1.127 | -1.295 | - .168 |
| Object Code D | Summation of all frames in which the focus child's attention was directed at a handicapped child or a group including a handicapped child | .112 | - .088 | - .200 | 1.499 | .628 | - .871 |
| Individual Code Code 1 | Child attends to self - withdraws completely | - .081 | - .064 | .007 | - .081 | .986 | .067 |
| I1 x G | Child's attention is directed at a group without handicapped children | .334 | .036 | - .298 | - .059 | - .313 | - .154 |
| I6B x C | Child participates in an open-ended group activity with attention directed at another child | - .004 | - .131 | - .127 | - .379 | - .168 | .211 |
| I6C x D | Child participates in a closed, structured group activity with attention directed at a handicapped child or group including a handicapped child | - .120 | - .139 | - .019 | 1.430 | 0.078 | -1.552 |
| I6C x E | Child participates in a closed, structured activity group with attention directed at some object | - .246 | .161 | .040 | - .469 | - .503 | - .034 |
| R7B x C7 | Child receives a playful intrusion from another child and responds actively and appropriately | - .227 | .044 | .270 | - .347 | - .302 | .015 |

## TABLE 7.2
## KEY PRESCOTT-SRI FRAMES INCLUDED IN BOTH PRETEST AND POSTTEST DISCRIMINANT FUNCTIONS FOR CHILDREN IDENTIFIED AS SPEECH IMPAIRED

Z-Scores

| Frame | Description | Head Start (N=109) |  |  | Non-Head Start (N=[illegible]) |  |  |
|---|---|---|---|---|---|---|---|
|  |  | Pretest | Posttest | Mean Change | Pretest | Posttest | Mean Change |
| Summary Code 2 | Extent of participation and involvement (1 = low; 5 = high) | 3.592 | 3.762 | .170 | 3.590 | 4.100 | .510 |
| Summary Code 5 | Affect (1 = distressed; 5 = happy) | 3.395 | 3.578 | .183 | 3.580 | 3.810 | .230 |
| Summary Code 7 | Involvement with other children (1 = avoids; 5 = seeks out involvement) | 3.174 | 3.294 | .120 | 3.580 | 3.830 | .250 |
| Summary Code 8 | Involvement with handicapped children (1 = avoids; 5 = seeks out involvement) | 2.229 | 2.292 | .063 | 3.670 | 3.830 | .160 |
| Object Code A | Summation of all frames in which the focus child's attention was directed at an adult | .171 | .021 | - .150 | .755 | 1.513 | .758 |
| Object Code C | Summation of all frames in which the focus child's attention was directed at another child | - .012 | - .078 | - .066 | -1.012 | - .811 | .201 |
| Object Code D | Summation of all frames in which the focus child's attention was directed at a handicapped child or a group including a handicapped child | - .124 | - .062 | .062 | 1.229 | .825 | -.404 |
| Individual Code<br>Code 1 | Child attends to self - withdraws completely | - .087 | - .064 | .023 | - .067 | .064 | .131 |
| I1 x G | Child's attention is directed at a group without handicapped children | .435 | .175 | - .260 | - .216 | - .318 | - .102 |
| I6B x C | Child participates in an open-ended group activity with attention directed at another child | - .043 | - .025 | .018 | - .284 | - .105 | .179 |
| I6C x D | Child participates in a closed, structured group activity with attention directed at a handicapped child or group including a handicapped child | - .135 | - .080 | .055 | 1.874 | .082 | - 1.792 |
| I6C x E | Child participates in a closed, structured activity group with attention directed at some object | - .123 | .132 | .255 | - .105 | - .562 | - .457 |
| R7B x C7 | Child receives a playful intrusion from another child and responds actively and appropriately | .215 | .071 | [illegible] | .315 | .310 | - .005 |

# TABLE 7.3
# KEY PRESCOTT-SRI FRAMES INCLUDED IN BOTH PRETEST AND POSTTEST DISCRIMINANT FUNCTIONS FOR CHILDREN IDENTIFIED AS HEALTH OR DEVELOPMENTALLY IMPAIRED

Z-Scores

| Frame | Description | Head Start (N=63) | | | Non-Head Start (N=29) | | |
|---|---|---|---|---|---|---|---|
| | | Pretest | Posttest | Mean Change | Pretest | Posttest | Mean Change |
| Summary Code 2 | Extent of participation and involvement (1 = low; 5 = high) | 3.021 | 3.402 | .381 | 3.517 | 3.534 | .017 |
| Summary Code 5 | Affect (1 = distressed; 5 = happy) | 3.214 | 3.540 | .326 | 3.345 | 3.310 | - .035 |
| Summary Code 7 | Involvement with other children (1 = avoids; 5 = seeks out involvement) | 2.929 | 3.325 | .396 | 3.069 | 2.828 | - .241 |
| Summary Code 8 | Involvement with handicapped children (1 = avoids; 5 = seeks out involvement) | 2.286 | 2.992 | .706 | 5.000 | 5.155 | .155 |
| Object Code A | Summation of all frames in which the focus child's attention was directed at an adult | .219 | .397 | .178 | .761 | .709 | - .052 |
| Object Code C | Summation of all frames in which the focus child's attention was directed at another child | - .278 | - .219 | .059 | -1.111 | -1.309 | - .198 |
| Object Code D | Summation of all frames in which the focus child's attention was directed at a handicapped child or a group including a handicapped child | .011 | - .043 | - .054 | 1.010 | 1.250 | .240 |
| Individual Code Code 1 | Child attends to self - withdraws completely | - .078 | .275 | .353 | - .069 | .489 | .558 |
| I1 x G | Child's attention is directed at a group without handicapped children | .076 | - .104 | -.180 | - .316 | - .519 | - .203 |
| I6B x C | Child participates in an open-ended group activity with attention directed at another child | - .003 | - .098 | - .095 | - .387 | - .176 | .211 |
| I6C x D | Child participates in a closed, structured group activity with attention directed at a handicapped child or group including a handicapped child | - .119 | - .127 | - .008 | 1.317 | .270 | -1.047 |
| I6C x E | Child participates in a closed, structured activity group with attention directed at some object | - .055 | .105 | .160 | - .387 | .035 | .422 |
| R7B x C7 | Child receives a playful intrusion from another child and responds actively and appropriately | - .127 | .177 | .301 | - .388 | - .340 | .048 |

## TABLE 7.4

## KEY PRESCOTT-SRI FRAMES INCLUDED IN BOTH PRETEST AND POSTTEST DISCRIMINANT FUNCTIONS FOR CHILDREN IDENTIFIED AS MENTALLY RETARDED

Z-Scores

| Frame | Description | Head Start (N=44) | | | Non-Head Start (N=115) | | |
|---|---|---|---|---|---|---|---|
| | | Pretest | Posttest | Mean Change | Pretest | Posttest | Mean Change |
| Summary Code 2 | Extent of participation and involvement (1 = low; 5 = high) | 3.239 | 3.443 | .204 | 3.300 | 3.365 | .065 |
| Summary Code 5 | Affect (1 = distressed; 5 = happy) | 3.352 | 3.352 | 0 | 3.687 | 3.448 | - .239 |
| Summary Code 7 | Involvement with other children (1 = avoids; 5 = seeks out involvement) | 2.807 | 2.943 | .137 | 3,096 | 2.778 | .318 |
| Summary Code 8 | Involvement with handicapped children (1 = avoids; 5 = seeks out involvement) | 2.557 | 3.046 | .489 | 4.587 | 4.922 | .335 |
| Object Code A | Summation of all frames in which the focus child's attention was directed at an adult | .454 | .611 | .157 | .923 | .981 | .058 |
| Object Code C | Summation of all frames in which the focus child's attention was directed at another child | - .324 | - .493 | - .169 | -1.179 | -1.312 | - .133 |
| Object Code D | Summation of all frames in which the focus child's attention was directed at a handicapped child or a group including a handicapped child | .144 | - .150 | - .294 | 2.156 | .756 | -1.400 |
| Individual Code Code 1 | Child attends to self - withdraws completely | - .079 | .179 | .258 | .411 | 13.421 | 13.010 |
| I1 x G | Child's attention is directed at a group without handicapped children | .663 | - .221 | - .884 | - .253 | - .379 | - .126 |
| I6B x C | Child participates in an open-ended group activity with attention directed at another child | - .206 | .029 | .234 | - .381 | - .206 | .175 |
| I6C x D | Child participates in a closed, structured group activity with attention directed at a handicapped child or group including a handicapped child | - .175 | - .110 | .065 | 1.967 | .198 | -1.769 |
| I6C x E | Child participates in a closed, structured activity group with attention directed at some object | - .273 | .280 | .553 | - .452 | - .188 | .264 |
| R7B x C7 | Child receives a playful intrusion from another child and responds actively and appropriately | .237 | .308 | .545 | - .378 | - .252 | .126 |

## TABLE 7.5
## KEY PRESCOTT-SRI FRAMES INCLUDED IN BOTH PRETEST AND POSTTEST DISCRIMINANT FUNCTIONS FOR CHILDREN IDENTIFIED AS LEARNING DISABLED OR AS SERIOUSLY EMOTIONALLY DISTURBED

Z-Scores

| **Frame** | **Description** | **Head Start (N=37)** | | | **Non-Head Start (N=15)** | | |
|---|---|---|---|---|---|---|---|
| | | **Pretest** | **Posttest** | **Mean Change** | **Pretest** | **Posttest** | **Mean Change** |
| **Summary Code 2** | **Extent of participation and involvement (1 = low; 5 = high)** | 3.302 | 3.750 | .448 | 3.633 | 3.633 | 0 |
| **Summary Code 5** | **Affect (1 = distressed; 5 = happy)** | 3.271 | 3.406 | .135 | 3.467 | 3.555 | .089 |
| **Summary Code 7** | **Involvement with other children (1 = avoids; 5 = seeks out involvement)** | 3.052 | 3.271 | .219 | 3.378 | 3.311 | - .067 |
| **Summary Code 8** | **Involvement with handicapped children (1 = avoids; 5 = seeks out involvement)** | 2.854 | 2.948 | .094 | 3.689 | 4.443 | .744 |
| **Object Code A** | **Summation of all frames in which the focus child's attention was directed at an adult** | .422 | .251 | - .171 | .142 | .692 | .550 |
| **Object Code C** | **Summation of all frames in which the focus child's attention was directed at another child** | - .308 | - .180 | .128 | - .722 | - .890 | - .168 |
| **Object Code D** | **Summation of all frames in which the focus child's attention was directed at a handicapped child or a group including a handicapped child** | .305 | .228 | - .077 | 1.588 | 1.190 | - .398 |
| **Individual Code Code 1** | **Child attends to self - withdraws completely** | - .090 | - .064 | .026 | - .069 | 1.243 | 1.312 |
| **I1 x G** | **Child's attention is directed at a group without handicapped children** | .163 | .134 | - .029 | - .143 | - .509 | - .366 |
| **I6B x C** | **Child participates in an open-ended group activity with attention directed at another child** | - .271 | .041 | .312 | - .314 | - .253 | .061 |
| **I6C x D** | **Child participates in a closed, structured group activity with attention directed at a handicapped child or group including a handicapped child** | .225 | .305 | .080 | 1.062 | .317 | -.745 |
| **I6C x E** | **Child participates in a closed, structured activity group with attention directed at some object** | .123 | .154 | .031 | .030 | - .558 | - .588 |
| **R7B x C7** | **Child receives a playful intrusion from another child and responds actively and appropriately** | - .295 | - .128 | .167 | - .215 | - .204 | .011 |

## TABLE 7.6
## KEY PRESCOTT-SKI FRAMES INCLUDED IN BOTH PRETEST AND POSTTEST DISCRIMINANT FUNCTIONS FOR CHILDREN IDENTIFIED WITH OTHER[1] HANDICAPPING CONDITIONS

| | | Z-Scores | | | | | |
|---|---|---|---|---|---|---|---|
| | | Head Start (N=37) | | | Non-Head Start (N=16) | | |
| Frame | Description | Pretest | Posttest | Mean Change | Pretest | Posttest | Mean Change |
| Summary Code 2 | Extent of participation and involvement (1 = low; 5 = high) | 3.703 | 4.027 | .324 | 4.031 | 3.656 | - .375 |
| Summary Code 5 | Affect (1 = distressed; 5 = happy) | 3.432 | 3.649 | .217 | 3.906 | 3.469 | - .437 |
| Summary Code 7 | Involvement with other children (1 = avoids; 5 = seeks out involvement) | 3.189 | 3.351 | .162 | 4,000 | 3.719 | - .281 |
| Summary Code 8 | Involvement with handicapped children (1 = avoids; 5 = seeks out involvement) | 2.392 | 2.716 | .324 | 4.875 | 4.843 | - .032 |
| Object Code A | Summation of all frames in which the focus child's attention was directed at an adult | - .095 | .070 | .165 | 1.541 | 1.900 | .359 |
| Object Code C | Summation of all frames in which the focus child's attention was directed at another child | - .144 | - .326 | - .182 | -1.258 | - .722 | .536 |
| Object Code D | Summation of all frames in which the focus child's attention was directed at a handicapped child or a group including a handicapped child | - .150 | - .174 | - .024 | 3.504 | 1.206 | -2.298 |
| Individual Code Code 1 | Child attends to self - withdraws completely | - .078 | - .064 | .014 | .004 | 6.620 | 6.616 |
| I1 x G | Child's attention is directed at a group without handicapped children | .612 | .043 | - .569 | - .163 | - .419 | - .256 |
| I6B x C | Child participates in an open-ended group activity with attention directed at another child | .087 | - .100 | - .186 | - .410 | - .242 | .168 |
| I6C x D | Child participates in a closed, structured group activity with attention directed at a handicapped child or group including a handicapped child | - .008 | - .204 | - .196 | 4.052 | .329 | -3.723 |
| I6C x E | Child participates in a closed, structured activity group with attention directed at some object | .075 | .272 | .197 | - .397 | - .332 | .075 |
| R7B x C7 | Child receives a playful intrusion from another child and responds actively and appropriately | .031 | .210 | .179 | - .388 | - .340 | .048 |

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[1] The category "other" includes blind, visually impaired, deaf and hearing impaired.

# 8

## BETWEEN-GROUPS ANALYSES

### Overview

The intent of this chapter is to suggest answers to two of the study questions posed in Chapter 1:

> How does the progress of handicapped children enrolled in Head Start compare with the progress of handicapped children receiving no special services?
>
> How does the progress of handicapped children enrolled in Head Start compare with the progress of handicapped children enrolled in other programs of services?

For purposes of between-group comparisons, the outcome measures of interest include the subscales of the Alpern-Boll Developmental Profile, the California Preschool Social Competency, and two composite interaction variables derived from the Prescott-SRI Child Observation System. Comparisons involving the Alpern-Boll include all three study groups (sample sizes permitting). Comparisons on the other two measures are between Head Start and non-Head Start samples only. As mentioned in Chapter 2, the unit of analysis in this chapter is the child.

### Non-Comparability of Study Groups: The Covariate Set

Previous chapters in this report have served to demonstrate that the Head Start, non-Head Start, and non-served control group samples differ with respect to many of the variables that are believed to affect child development. Before reasonable attempts can be made to answer the two study questions posed above, the effects of these variables must be removed from outcome variance. In brief, these variables must be considered covariates. Guided by previous research and a careful review of pretest correlations between the various outcome measures and background variables, a set of covariates was defined. This set includes the following variables:[1]

- pretest scores on the outcome measures
- severity of handicap
- chronological age at posttest
- family income
- mother's education
- sex (coded as a dummy variable)
- ethnicity (coded as a dummy variable for whites, blacks and "others")
- presence of multiple handicaps (coded as a dummy variable)
- pretest score on High/Scope Home Environment Scale

This set of variables is utilized as the relevant covariates throughout most analyses in this chapter because preliminary analyses indicated that, in general, this variable set accounted for almost all significant variance in posttest outcome measures attributable to background variables. Other variables, such as father's education and occupation, mother's occupation, number of years of preschool program experience, and family structure did not result in significant increases in explained variance in any of the study groups for most outcome measures.[2]

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[1] This zero-order correlation matrix of the covariate set is presented in Appendix H.

[2] This was determined through random half-sample step-wise multiple regression analysis. Six separate half-sample regressions were conducted for each group. These analyses also ruled out the significance of several interactions that were also considered of potential importance. Finally it should be noted that this set of covariates could have been reduced to as few as three or four items for most outcome measures without significant loss of explained variance. In particular, income, mother's education, and ethnicity were relatively weak explanatory variables in most analyses. These variables were included in the set of covariates, however, because of their established significance in education research, and because for some subscales they did explain small but significant degrees of posttest variation.

A final note with respect to the set of covariates delineated above is in order. Three of these variables--pretest outcome score, handicap severity, and the High/Scope Home Environment Scale--are subject to measurement error and must be considered fallible. The use of fallible covariates, as elsewhere discussed, raises a caution in the interpretation of study results. It has been shown that variables whose correlations are attenuated by measurement error can lead to quite erroneous interpretations of ANCOVA results (see for example, Campbell and Erlebacher (1970)) unless these correlations are corrected for attenuation.

The problem, though, as noted by St. Pierre (1978) is that there is disagreement as to how to properly correct for attenuation due to measurement error. Cohen and Cohen (1975) suggest that little is to be gained by such correction if the reliability of the measures in question is .8 or higher. The outcome measures (the Alpern-Boll Developmental Profile, the California Preschool Social Competency Scale, and the Prescott-SRI composite variables) have generally been shown either by their developers or through the reliability studies conducted specifically for this evaluation to have reliabilities within this range. The High/Scope Home Environment Scale also exhibited a high degree of reliability. Consequently, following the rule of thumb given by Cohen and Cohen, no attempt was made to adjust these covariates for attenuation.

With respect to severity, however, it has been pointed out in several places that the measurement of this variable, although adequate, is perhaps the most fallible of the variables in this evaluation effort. However, the fallibility of this measure does not lie with its reliability, but rather with its validity. There is no statistical correction for fallibility due to questionable covariate validity.

In brief, covariates in this study were not corrected for attenuation either because measurement reliability was considered high enough to make such correction relatively unimportant or because fallibility was not a function of the measure's reliability.

## Definition of Treatment

In the context of analyses undertaken in this chapter, "treatment" is defined by the totality of experiences a child encounters (or fails to encounter) as a result of his/her program participation (or lack thereof). As defined, therefore, the "treatment" a child received in his/her program not only includes the program of services afforded by the program, but also the characteristics of the program and the characteristics/philosophies of program staff. "Treatments" are broadly defined as participation in Head Start programs, participation in non-Head Start programs, and no program participation (no treatment).

## Analysis Strategy

The analytical approach adopted for between-group analyses is set-wise hierarchical regression analysis.[1] This procedure estimates the magnitude and significance of "treatment effects" through the analysis of three separate regression equations for each between-groups comparison undertaken. The significance of the increase in explained variance $R^2$ between each of these regressions is then evaluated through an F-test for incremental $R^2$ values. The first regression equation involves the outcome measure and the covariates delineated above. The second equation includes the same variables as the first plus the addition of "treatment" (or group membership) variables. The third equation includes the covariates and treatment variables as well as a set of variables representing interactions between the covariates and treatment group variables. Analysis of incremental $R^2$ for this last regression is particularly important because if the covariate/treatment interaction is significant, the regression planes for the treatment groups have unequal slopes (are not parallel) and a critical assumption underlying ANCOVA is untenable. Estimates of treatment effects under conditions of regression heterogeneity (unequal regression slopes) are extremely problematic. In the current study, analyses indicating significant covariate/treatment interaction are presented, but no speculation concerning differential treatment effects are suggested, nor are they warranted.

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[1] This technique is discussed extensively in Cohen and Cohen (1975). All analyses were conducted through computer programs available in the Statistical Package for the Social Sciences.

### Defining Appropriate Cases for Analysis: The Problem of Outliers

Before proceeding with a discussion of study results, one final issue should be discussed. This issue concerns children who exhibited extreme developmental gains or losses over the course of the evaluation. Preliminary analysis of raw change scores indicated a small number of children who evidenced unreasonably large posttest developmental gains/losses. A review of the data schedules for a sample of these "outliers" revealed that these extreme gains were not consistent across Alpern-Boll subscales; that is, a child with extreme gains on one subscale generally exhibited moderate gains on the other subscales. Further, no one subscale was particularly susceptible to extreme gains. Extreme gains were also not associated with any particular set of demographic variables or with the type of program in which outliers were enrolled. Although additional analysis of outliers may be warranted, these preliminary investigations led project staff to conclude that outliers resulted from unsystematic errors in completing developmental profiles.

Although many of the outliers showed substantial posttest losses, the majority of the outliers showed gains. Because of this fact, it was felt that inclusion of outliers in between-groups analyses might artificially contribute to the identification of treatment effects. Therefore, two options were considered for dealing with outliers. The first of these was to exclude from analysis of particular subscales the data for any child that exceeded a rationally-defined "confidence interval" for posttest raw developmental changes. The second option involved compressing outliers to the end points of these same change score confidence intervals. Between-groups analyses were then conducted for children identified as speech impaired and as physically handicapped utilizing data sets that included unadjusted outliers, excluded outliers, and included adjusted outliers.[1] These analyses indicated that regardless of the data set employed, the results were consistent.

However, analysis of the data set that excluded outliers resulted in substantial increases in $R^2$ for the set of covariates. Given measurement issues raised previously, project staff, with ACYF's consensus, opted for analyses involving data sets that excluded outliers because it represented the most conservative approach to between-groups analysis.

Results of the outlier analyses can be found in Appendix F. A complete discussion of the procedure used to establish subscale confidence intervals can be located in Appendix C (Technical Memorandum #3).

The effect of eliminating outliers on overall sample sizes for each of the study groups is shown in Table 8.1. With the exception of the communication and social skills subscales, elimination of outliers resulted in sample losses of approximately 10 percent or less for each study group. It should be noted, though, that sample losses were consistently higher among children enrolled in programs of services (Head Start and non-Head Start). This could be interpreted as meaning that the exclusion of outliers resulted in the exclusion of

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[1] Children identified as physically handicapped and speech impaired were used for these analyses because these groups were relatively comparable across key demographic characteristics and one group (the physically handicapped) included few outliers while the other group (the speech impaired) exhibited substantially greater variability on raw change scores. Also, one group (the physically handicapped) had a greater certainty of being legitimately handicapped whereas the other group (the speech impaired) had a higher possibility of including children with only transitory or marginal disabilities.

TABLE 8.1: REDUCTION IN SAMPLE SIZES DUE TO THE ELIMINATION OF OUTLIERS FROM ALPERN-BOLL SUBSCALES, BY PROGRAM TYPE

| | | HEAD START | NON-HEAD START | NON-SERVED |
|---|---|---|---|---|
| Physical Age | Analytical Sample | 89.8<br>(N=351) | 92.8<br>(N=298) | 96.6<br>(N=114) |
| | Outliers | 10.2<br>(N= 40) | 7.2<br>(N= 23) | 3.4<br>(N= 4) |
| Self-help Age | Analytical Sample | 88.2<br>(N=345) | 91.6<br>(N=294) | 94.9<br>(N=112) |
| | Outliers | 11.8<br>(N= 46) | 8.4<br>(N= 27) | 5.1<br>(N= 6) |
| Social Age | Analytical Sample | 80.8<br>(N=316) | 84.1<br>(N=270) | 89.0<br>(N=105) |
| | Outliers | 19.2<br>(N= 75) | 15.9<br>(N= 51) | 11.0<br>(N= 13) |
| Academic Age | Analytical Sample | 95.1<br>(N=372) | 94.4<br>(N=303) | 96.6<br>(N=114) |
| | Outliers | 4.9<br>(N= 19) | 5.6<br>(N= 18) | 3.4<br>(N= 4) |
| Communication Age | Analytical Sample | 81.3<br>(N=318) | 83.5<br>(N=268) | 90.7<br>(N=107) |
| | Outliers | 18.7<br>(N= 73) | 16.5<br>(N= 53) | 9.3<br>(N= 11) |

children whose extraordinary gains represented legitimate treatment effects. Nevertheless, project staff and ACYF personnel determined that for the purposes of this evaluation, errors in favor of conservatism were preferable to errors that favored misidentification of treatment effects.

## Analytical Results

Results of between-groups analyses are presented separately for each of the basic handicapping conditions except in situations in which sample sizes are too small to permit such analysis. One such group includes all children identified as blind, visually impaired, deaf, or hearing impaired (the "other" category in the following tables). Another group includes children identified as learning disabled or emotionally disturbed.

The tables are formatted so that the variance ($R^2$) accounted for by the set of covariates delineated earlier appears first. The next entry is the variance accounted for ($R^2$) by the covariate set and the "treatment" in dummy variables. This entry is followed by the difference in explained variance between the first and second $R^2$ entries. The statistical significance (F-ratio) of this change is indicated as well as the statistical significance of the incremental variance accounted for by the consideration of variables representing interactions between treatments and the set of covariates.

The lower section of these tables presents the partial regression coefficients and their respective standard errors for the treatment dummies. These coefficients are unstandardized and may be interpreted as the mean deviation in developmental months among the outcomes for the study group in question relative to the mean posttest score of a reference group adjusted for the set of covariates.

The point of reference for most analyses is the non-served control group. For the "other" handicap group and the emotionally disturbed/learning disabled group, however, the number of non-served children was far too small to serve as a stable point of reference. In these two groups, the reference group is the non-Head Start sample.

For all analyses, the partial regression coefficients are taken from the equation involving the set of covariates and the treatment dummies. These coefficients should be considered cautiously if the change in $R^2$ resulting from inclusion of treatment variables in the analysis is non-significant. They should be ignored completely in the event the F-ratio for the treatment/covariate interaction variable set is significant. Such interactions indicate lack of regression homogeneity and ANCOVA results become almost meaningless.

Three sets of tables have been developed to present analytical results. The first set considers the subscales of the Alpern-Boll Developmental Profile; the second set, the California Preschool Social Competency Scale; and the third set, the Prescott-SRI Child Observation System composite variables. Each set of tables is discussed in turn.

## *THE ALPERN-BOLL DEVELOPMENTAL PROFILE*

Between-groups analytical results are presented in Tables 8.2 through 8.7. In general, these data indicate that there are few significant treatment effects for handicapped children enrolled in programs of services relative to children who are unserved. This is not surprising given the relatively short interval between the pretest and posttest data collection activities.

However, while few significant treatment effects can be identified for most Alpern-Boll subscales by handicap, there are some notable exceptions. In particular, children identified as speech impaired show significant treatment effects on all subscales except that pertaining to the development of social skills (Table 8.3). Moreover, these treatment effects are relatively large and generally indicate positive gains of at least 4 or more months. Differences in adjusted gains are relatively comparable between Head Start and non-Head Start programs although where between programs differences of 2 or more months occur, they are differences in favor of Head Start enrollees (self-help skills and academic skills).

Other treatment effects that achieved predefined statistical significance occur among the physically handicapped on the self-help skills subscale (Table 8.2) and among the mentally retarded on the motoric skills subscale (Table 8.5). In each instance, Head Start enrollees evidence adjusted gains that are positive and of greater magnitude than those of non-Head Start enrollees.

The magnitude of treatment effects in terms of the increased proportion of posttest variance accounted for by the treatment is slight. Increases range between 1 and 2 percent. However, considering the large proportion of posttest variance accounted for by the covariate set (generally over 70%), increases in explained variance of 1 to 2 percent are substantively significant.

Of course, the interpretation of these results must be tempered by the cautions raised in Chapters 2 and 3. Further, the point of reference in the analyses presented in Tables 8.2 through 8.5 is the non-served group. This reference group implies that gains for the treatment group exceed an expected maturation that is defined by the non-served pretest/posttest gains. To the extent that the non-served groups differ substantially from the treatment groups, especially with respect to severity, the identification of 1) treatment effects; 2) differences in effects between program groups; or 3) the lack of treatment effects must not be viewed as conclusive.

With the appropriate cautions in mind, however, an interesting trend observable in Tables 8.2 through 8.5 is that the partial regression coefficients for the Head Start enrollees are almost invariably higher than those of non-Head Start enrollees regardless of whether or not significant treatment effects obtain. The stability of these coefficients (as measured by their standard errors (SE)) is poor, but the overall trend is noteworthy.

This trend is reinforced by the data in Tables 8.6 and 8.7. Table 8.6 presents ANCOVA results for the learning disabled/emotionally disturbed group; Table 8.7 presents results for the "other" handicaps group (blind, deaf, visually impaired, hearing impaired). For these tables, the reference group is the non-Head Start enrollees because, as previously indicated, there were too few non-served children identified with these handicaps to permit the use of non-served children as a stable point of reference. As these tables indicate, the partial regression coefficient on every subscale indicates greater adjusted developmental gains for Head Start enrollees. Only three of these coefficients, though, are associated with statistically and substantially significant increases in explained posttest variance--the social skills subscale for the "other" handicaps group and the motoric and academic subscales for the learning disabled/emotionally disturbed group.

Results of the analyses presented in Tables 8.2 through 8.7 are highlighted in Table 8.28 in the Chapter Summary (page 8.44).

## TABLE 8.2

## BETWEEN GROUPS ANALYSIS OF COVARIANCE: ALPERN-BOLL SUBSCALES FOR CHILDREN IDENTIFIED AS PHYSICALLY HANDICAPPED, OUTLIERS EXCLUDED

| | | Physical Age | Self-Help Age | Social Age | Academic Age | Communication Age |
|---|---|---|---|---|---|---|
| Covariates | | $R^2$ = .8360 | $R^2$ = .8185 | $R^2$ = .7969 | $R^2$ = .8147 | $R^2$ = .8779 |
| Treatment | | $R^2$ = .8414 | $R^2$ = .8310 | $R^2$ = .7971 | $R^2$ = .8148 | $R^2$ = .8789 |
| Change in $R^2$ | | .0054 | .0125 | .0002 | .0001 | .0010 |
| F Value of Change in $R^2$ | | 2.284<br>(df: 2,124) | 4.438**<br>(df: 2,120) | .0023<br>(df: 2,109) | .024<br>(df: 2,127) | .421<br>(df: 2,100) |
| Covariate/Treatment Interaction (F Value) | | 1.628*<br>(df: 16,107) | .697<br>(df: 16,103) | 1.315<br>(df: 16,92) | 1.517<br>(df: 16,110) | 1.124<br>(df: 16,83) |
| Partial Regression Coefficient: 1/ | | | | | | |
| Head Start | B.cov | -0.35 | 3.71 | .735 | .28 | -3.11 |
| | SE | 3.79 | 4.[illegible]3 | 4.27 | 3.53 | 3.49 |
| Non-Head Start | B.cov | -4.30 | -3.98 | -.34 | .61 | -2.91 |
| | SE | 3.70 | 4.54 | 4.22 | 3.53 | 3.38 |

* Significant at the .1 level.

** Significant at the .05 level.

*** Significant at the .01 level.

See pages 8.8-8.9 for interpretive discussion of table entries.

1/ Point of reference: Number of Non-Served Children identified as physically handicapped (18). Coefficients may be interpreted as the difference in developmental months between adjusted posttest means of the Head Start and non-Head Start children from the adjusted posttest mean of the Non-Served Control group.

## TABLE 8.3

## BETWEEN GROUPS ANALYSIS OF COVARIANCE: ALPERN-BOLL SUBSCALES FOR CHILDREN IDENTIFIED AS SPEECH IMPAIRED, OUTLIERS EXCLUDED

| | | Physical Age | Self-Help Age | Social Age | Academic Age | Communication Age |
|---|---|---|---|---|---|---|
| Covariates | | $R^2$ = .7209 | $R^2$ = .7514 | $R^2$ = .6987 | $R^2$ = .7047 | $R^2$ = .7990 |
| Treatment | | $R^2$ = .7375 | $R^2$ = .7636 | $R^2$ = .7059 | $R^2$ = .7183 | $R^2$ = .8077 |
| Change in $R^2$ | | .0166 | .0123 | .0072 | .0136 | .0087 |
| F Value of Change in $R^2$ | | 5.881***<br>(df: 2,186) | 4.654**<br>(df: 2,179) | 2.142<br>(df: 2,174) | 4.703**<br>(df: 2,195) | 3.827**<br>(df: 2,170) |
| Covariate/Treatment Interaction (F Value) | | 1.299<br>(df: 16,170) | 1.374<br>(df: 16,163) | 1.393<br>(df: 16,157) | 1.117<br>(df: 16,178) | .735<br>(df: 16,153) |
| Partial Regression Coefficient:[1/] | | | | | | |
| Head Start | $\bar{B}$.cov | 9.22 | 5.75 | 4.46 | 7.05 | 5.76 |
| | SE | 3.02 | 2.77 | 2.71 | 2.35 | 2.15 |
| Non-Head Start | B.cov | 10.99 | 0.83 | 4.80 | 4.94 | 5.91 |
| | SE | 3.27 | 3.07 | 2.80 | 2.52 | 2.38 |

* Significant at the .1 level.

** Significant at the .05 level.

*** Significant at the .01 level.

See pages 8.8-8.9 for interpretive discussion of table entries.

[1/] Point of reference: Number of Non-Served Children identified as speech impaired (50). Coefficients may be interpreted as the difference in developmental months between adjusted posttest means of the Head Start and non-Head Start children from the adjusted posttest mean of the Non-Served Control group.

## TABLE 8.4

## BETWEEN GROUPS ANALYSIS OF COVARIANCE: ALPERN-BOLL SUBSCALES FOR CHILDREN IDENTIFIED AS HEALTH OR DEVELOPMENTALLY IMPAIRED, OUTLIERS EXCLUDED

| | | Physical Age | Self-Help Age | Social Age | Academic Age | Communication Age |
|---|---|---|---|---|---|---|
| Covariates | | $R^2$ = .8131 | $R^2$ = .8210 | $R^2$ = .8834 | $R^2$ = .8390 | $R^2$ = .9072 |
| Treatment | | $R^2$ = .8189 | $R^2$ = .8231 | $R^2$ = .8842 | $R^2$ = .8430 | $R^2$ = .9113 |
| Change in $R^2$ | | .0058 | .0021 | .0008 | .0040 | .0041 |
| F Value of Change in $R^2$ | | 1.473<br>(df: 2,92) | .546<br>(df: 2,92) | .276<br>(df: 2,80) | 1.236<br>(df: 2,97) | 1.872<br>(df: 2,81) |
| Covariate/Treatment Interaction (F Value) | | .602<br>(df: 16,75) | .957<br>(df: 16,75) | .792<br>(df: 16,63) | .414<br>(df: 16,80) | .962<br>(df: 16,64) |
| Partial Regression Coefficient: 1/ | | | | | | |
| Head Start | B.cov | 2.50 | 2.46 | -3.22 | 5.08 | 2.07 |
| | SE | 5.78 | 6.09 | 4.60 | 4.15 | 3.86 |
| Non-Head Start | B.cov | -2.97 | -0.97 | -2.40 | 2.08 | -1.96 |
| | SE | 5.68 | 5.98 | 4.42 | 4.17 | 3.77 |

* Significant at the .1 level.

** Significant at the .05 level.

*** Significant at the .01 level.

See pages 8.8-8.9 for interpretive discussion of table entries.

1/ Point of Reference: Number of non-served children identified as health or developmentally impaired (18).
Coefficients may be interpreted as the difference in developmental months between adjusted posttest means of the Head Start and non-Head Start children from the adjusted [illegible]tte[illegible]ean[illegible] th[illegible]n-S[illegible]ed [illegible]rol g[illegible]up.

## TABLE 8.5

## BETWEEN GROUPS ANALYSIS OF COVARIANCE: ALPERN-BOLL SUBSCALES FOR CHILDREN IDENTIFIED AS MENTALLY RETARDED, OUTLIERS EXCLUDED

| | | Physical Age | Self-Help Age | Social Age | Academic Age | Communication Age |
|---|---|---|---|---|---|---|
| Covariates | | $R^2$ = .7704 | $R^2$ = .8687 | $R^2$ = .8230 | $R^2$ = .8076 | $R^2$ = .8736 |
| Treatment | | $R^2$ = .7876 | $R^2$ = .8729 | $R^2$ = .8268 | $R^2$ = .8140 | $R^2$ = .8780 |
| Change in $R^2$ | | .0172 | .0042 | .0038 | .0064 | .0044 |
| F Value of Change in $R^2$ | | 6.438***<br>(df: 2,159) | 2.710*<br>(df: 2,164) | 1.602<br>(df: 2,146) | 2.890*<br>(df: 2,168) | 2.867*<br>(df: 2,159) |
| Covariate/Treatment Interaction (F Value) | | .787<br>(df: 16,142) | .641<br>(df: 16,147) | 1.272<br>(df: 16,129) | .786<br>(df: 16,151) | 1.160<br>(df: 16,146) |
| Partial Regression Coefficient: 1/ | | | | | | |
| Head Start | B.cov | 8.03 | 2.19 | -0.92 | 5.60 | 3.09 |
| | SE | 3.62 | 3.40 | 3.45 | 2.95 | 2.53 |
| Non-Head Start | B.cov | 0.93 | -1.99 | -3.51 | 2.01 | -0.33 |
| | SE | 3.15 | 2.93 | 2.96 | 2.58 | 2.23 |

* Significant at the .1 level.

** Significant at the .05 level.

*** Significant at the .01 level.

See pages 8.8-8.9 for interpretive discussion of table entries.

1/ Point of reference: Number of non-served mentally retarded children (21). Coefficients may be interpreted as the difference in developmental months between adjusted posttest means of the Head Start and non-Head Start children from the adjusted posttest mean of the Non-Served Control group.

## TABLE 8.6

## BETWEEN GROUPS ANALYSIS OF COVARIANCE: ALPERN-BOLL SUBSCALES FOR CHILDREN IDENTIFIED AS LEARNING DISABLED OR AS SERIOUSLY EMOTIONALLY DISTURBED, OUTLIERS EXCLUDED

| | Physical Age | Self-Help Age | Social Age | Academic Age | Communication Age |
|---|---|---|---|---|---|
| Covariates | $R^2$ = .6225 | $R^2$ = .6752 | $R^2$ = .6962 | $R^2$ = .6821 | $R^2$ = .8655 |
| Treatment | $R^2$ = .6434 | $R^2$ = .6759 | $R^2$ = .7038 | $R^2$ = .7061 | $R^2$ = .8663 |
| Change in $R^2$ | .0172 | .0007 | .0073 | .0240 | .0008 |
| F Value of Change in $R^2$ | 4.512**<br>(df: 1,77) | .156<br>(df: 1,72) | 1.918<br>(df: 1,63) | 6.125**<br>(df: 1,75) | .365<br>(df: 1,61) |
| Covariate/Treatment Interaction (F Value) | .638<br>(df: 10,66) | 1.849*<br>(df: 10,61) | 1.115<br>(df: 10,52) | 1.353<br>(df: 10,64) | 1.083<br>(df: 10,50) |
| Partial Regression Coefficient:[1/] | | | | | |
| Head Start B.cov | 6.53 | 1.09 | 3.59 | 5.43 | 1.22 |
| SE | 3.60 | 2.81 | 2.83 | 2.19 | 1.99 |

* Significant at the .1 level.

** Significant at the .05 level.

*** Significant at the .01 level.

See pages 8.8-8.9 for interpretive discussion of table entries.

[1/] Point of reference: Number of Non-Head Start children identified with specific learning disabilities or being seriously emotionally disturbed (24).
Coefficient may be interpreted as the difference in developmental months between the adjusted posttest mean of Head Start children from the adjusted posttest mean of non-Head Start children.

## TABLE 8.7

## BETWEEN GROUPS ANALYSIS OF COVARIANCE: ALPERN-BOLL SUBSCALES FOR CHILDREN IDENTIFIED WITH OTHER HANDICAPS,1/ OUTLIERS EXCLUDED

| | Physical Age | Self-Help Age | Social Age | Academic Age | Communication Age |
|---|---|---|---|---|---|
| Covariates | $R^2$ = .7124 | $R^2$ = .7131 | $R^2$ = .7104 | $R^2$ = .7916 | $R^2$ = .7541 |
| Treatment | $R^2$ = .7210 | $R^2$ = .7155 | $R^2$ = .7771 | $R^2$ = .7958 | $R^2$ = .7568 |
| Change in $R^2$ | .0086 | .0024 | .0667 | .0042 | .0073 |
| F Value of Change in $R^2$ | 1.170<br>(df: 1,38) | .131<br>(df: 1,39) | 10.473**<br>(df: 1,35) | .823<br>(df: 1,40) | 1.38<br>(df: 1,35) |
| Covariate/Treatment Interaction (F Value) | .692<br>(df: 10,27) | 1.038<br>(df: 9,29) | .248<br>(df: 9,25) | .394<br>(df: 9,30) | .422<br>(df: 9,25) |
| Partial Regression Coefficient: 2/ | | | | | |
| Head Start B.cov | 4.31 | 2.44 | 9.02 | 2.71 | 3.8 |
| SE | 3.98 | 4.23 | 2.79 | 2.98 | 3.22 |

* Significant at the .1 level.

** Significant at the .05 level.

*** Significant at the .01 level.

See pages 8.8-8.9 for interpretive discussion of table entries.

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1/ The category "Other" includes blind, visually impaired, deaf, and hearing impaired.

2/ Point of reference: Number of Non-Head Start Children identified with "Other" handicapping conditions (17). Coefficient may be interpreted as the difference in developmental months between the adjusted posttest mean of Head Start children from the adjusted posttest mean of Non-Head Start children.

## THE CALIFORNIA PRESCHOOL SOCIAL COMPETENCY SCALE

Between groups analyses involving the California Preschool Social Competency Scale[1] are presented in Tables 8.8 through 8.13. The outcome considered in these analyses is the posttest percentile rank of the handicapped children. The percentile ranks are normed by age, sex, and parent's occupational status (see Appendix I for a more complete description of the California Preschool Social Competency Scale). The items which make up this scale generally address a child's social skills in a classroom context vis-a-vis adults and classmates. Items can also be grouped into several competency areas: response to routine, response to unfamiliar situations, following instructions, making explanations, sharing with and assisting other children, initiating and directing activities, reaction to frustration and response to imposed limitations.

Unlike analyses involving the Alpern-Boll Developmental Profile, there was no attempt to exclude children from California Preschool Social Competency Scale investigations who manifested large percentile rank gains or losses. This was because criteria for defining outliers were unavailable. Also, the analyses presented in Tables 8.8 through 8.13 involve only the Head Start and non-Head Start enrollees. In as much as this instrument was completed by program staff and concerned program behaviors, it was not administered for children in the non-served control group. The non-Head Start sample is the point of reference for estimating treatment effects.

The results of covariance analysis reveals no significant main effect for treatment for any of the handicapped groups. Further, for each handicap group with the exception of learning disabled/ emotionally disturbed group, there are significant treatment/ covariate set interactions indicating a lack of regression homogeneity. This, of course, renders conclusions about the presence or absence of treatment effects almost meaningless.

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[1] The California Preschool Social Competency Scale was developed by Samuel Levine, Freeman Elzy and Mary Lewis. It is used with the permission of the Consulting Psychologists' Press, Inc.

Because of this fact, this report makes no further attempt to determine whether adjusted differential treatment effects for the California Preschool Social Competency Scale exist. It is recognized that there are techniques available for establishing for which values of the covariate set estimates of the significance of group differences can properly be made (See, for example, Cohen and Cohen (1975), pp. 291-339; Walker and Lev (1953), pp. 398-411). These techniques, however, are difficult, if not impossible, to meaningfully apply if the number of covariates is large.[1] Consequently, further analysis of treatment outcomes as measured by the California Preschool Social Competency Scale is deferred to within-groups investigations (Chapter 9). In passing, though, it should be recalled that data in Chapter 4 indicated that mean percentile changes on the California Preschool Social Competency Scale were generally in a positive direction for most groups of handicapped children, particularly among Head Start enrollees. What is impossible to discern is whether such differences are differentially related to program effects.

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[1] If the lack of homogeneity could be traced to a specific interaction between treatment and a single covariate, it might be reasonable to explore "regions of significance" analysis. However, data indicate wholesale interactions between variables in the covariate set and treatment making a disentanglement of interaction problems extremely complicated.

## TABLE 8.8

## BETWEEN GROUPS ANALYSIS OF COVARIANCE: CALIFORNIA PRESCHOOL SOCIAL COMPETENCY SCALE PERCENTILES FOR CHILDREN IDENTIFIED AS PHYSICALLY HANDICAPPED

| | | |
|---|---|---|
| Covariates | | $R^2 = .3302$ |
| Treatment | | $R^2 = .3358$ |
| Change in $R^2$ | | .0056 |
| F Value of Change in $R^2$ | | .919<br>(df: 1,106) |
| Covariate/Treatment Interaction (F Value) | | 4.308***<br>(df: 10,94) |
| Partial Regression Coefficient[1] | | |
| Head Start | $B_{cov}$ | -5.95 |
| | SE | 6.23 |

* Significant at the .1 level.

** Significant at the .05 level.

*** Significant at the .01 level.

[1] Point of reference: Number of Non-Head Start children identified as physically handicapped (61). Coefficient refers to the mean percentile difference between adjusted posttest percentile ranks of Head Start children from the adjusted posttest percentile ranks of non-Head Start children.

See pages 8.8-8.9 for interpretive discussion of table entries.

## TABLE 8.9

## BETWEEN GROUPS ANALYSIS OF COVARIANCE: CALIFORNIA PRESCHOOL SOCIAL COMPETENCY SCALE PERCENTILES FOR CHILDREN IDENTIFIED AS SPEECH IMPAIRED

| | | |
|---|---|---|
| Covariates | | $R^2$ = .1587 |
| Treatment | | $R^2$ = .1635 |
| Change in $R^2$ | | .0048 |
| F Value of Change in $R^2$ | | .878<br>(df: 1, 153) |
| Covariate/Treatment Interaction (F Value) | | 1.9*<br>(df: 10, 142) |
| Partial Regression Coefficient[1] | | |
| Head Start | $B_{\cdot cov}$ | 5.10 |
| | SE | 5.41 |

* Significant at the .1 level.

** Significant at the .05 level.

*** Significant at the .01 level.

[1] Point of reference: Number of Non-Head Start children identified as speech impaired (55). Coefficient refers to the mean percentile difference between adjusted posttest percentile ranks of Head Start children from the adjusted posttest percentile ranks of non-Head Start children.

See pages 8.8-8.9 for interpretive discussion of table entries.

## TABLE 8.10

## BETWEEN GROUPS ANALYSIS OF COVARIANCE: CALIFORNIA PRESCHOOL SOCIAL COMPETENCY SCALE PERCENTILES FOR CHILDREN IDENTIFIED AS HEALTH OR DEVELOPMENTALLY IMPAIRED

| | | |
|---|---|---|
| Covariates | | $R^2$ = .3838 |
| Treatment | | $R^2$ = .3842 |
| Change in $R^2$ | | .0004 |
| F Value of Change in $R^2$ | | .053<br>(df: 1, 81) |
| Covariate/Treatment Interaction (F Value) | | 4.302***<br>(df: 10, 70) |
| Partial Regression Coefficient[1] | | |
| Head Start | $B._{cov}$ | 1.61 |
| | SE | 6.85 |

* Significant at the .1 level.

** Significant at the .05 level.

*** Significant at the .01 level.

[1] Point of reference: Number of Non-Head Start children identified as health or developmentally impaired (32). Coefficient refers to the mean percentile difference between adjusted posttest percentile ranks of Head Start children from the adjusted posttest percentile ranks of non-Head Start children.

See pages 8.8-8.9 for interpretive discussion of table entries.

## TABLE 8.11

## BETWEEN GROUPS ANALYSIS OF COVARIANCE: CALIFORNIA PRESCHOOL SOCIAL COMPETENCY SCALE PERCENTILES FOR CHILDREN IDENTIFIED AS MENTALLY RETARDED

| | |
|---|---|
| Covariates | $R^2 = .3270$ |
| Treatment | $R^2 = .3270$ |
| Change in $R^2$ | 0.0 |
| F Value of Change in $R^2$ | 0.0<br>(df: 1,149) |
| Covariate/Treatment Interaction (F Value) | 4.28***<br>(df: 10, 138) |

Partial Regression Coefficient[1]

| | | |
|---|---|---|
| Head Start | $B._{cov}$ | -0.53 |
| | SE | 4.31 |

* Significant at the .1 level.

** Significant at the .05 level.

*** Significant at the .01 level.

[1] Point of reference: Number of Non-Head Start children identified as mentally retarded (130). Coefficient refers to the mean percentile difference between adjusted posttest percentile ranks of Head Start children from the adjusted posttest percentile ranks of non-Head Start children.

See pages 8.8-8.9 for interpretive discussion of table entries.

## TABLE 8.12

## BETWEEN GROUPS ANALYSIS OF COVARIANCE: CALIFORNIA PRESCHOOL SOCIAL COMPETENCY SCALE PERCENTILES FOR CHILDREN IDENTIFIED AS SERIOUSLY EMOTIONALLY DISTURBED OR LEARNING DISABLED

| | |
|---|---|
| Covariates | $R^2$ = .3235 |
| Treatment | $R^2$ = .3288 |
| Change in $R^2$ | .0053 |
| F Value of Change in $R^2$ | .663<br>(df: 1, 84) |
| Covariate/Treatment Interaction (F Value) | .945<br>(df: 10,73) |

| Partial Regression Coefficient[1] | | |
|---|---|---|
| Head Start | $B._{cov}$ | 4.09 |
| | SE | 4.99 |

* Significant at the .1 level.

** Significant at the .05 level.

*** Significant at the .01 level.

[1] Point of reference: Number of Non-Head Start children identified as seriously emotionally disturbed or with specific learning disability (57). Coefficient refers to the mean percentile difference between adjusted posttest percentile ranks of Head Start children from the adjusted posttest percentile ranks of non-Head Start children.

See pages 8.8-8.9 for interpretive discussion of table entries.

## TABLE 8.13

## BETWEEN GROUPS ANALYSIS OF COVARIANCE: CALIFORNIA PRESCHOOL SOCIAL COMPETENCY SCALE PERCENTILES FOR CHILDREN IDENTIFIED WITH OTHER1/ HANDICAPPING CONDITIONS

| | | |
|---|---|---|
| Covariate | | $R^2$ = .2349 |
| Treatment | | $R^2$ = .2406 |
| Change in $R^2$ | | .0057 |
| F Value of Change in $R^2$ | | .325<br>(df: 1,43) |
| Covariate/Treatment Interaction (F Value) | | 3.705***<br>(df: 9,34) |
| Partial Regression Coefficient2/ | | |
| Head Start | $B._{cov}$ | 6.16 |
| | SE | 10.35 |

* Significant at the .1 level.

** Significant at the .05 level.

*** Significant at .01 level.

1/The Category "other" includes blind, visually impaired, deaf and hearing impaired.

2/Point of reference: Number of Non-Head Start children identified with other handicapping conditions (17). Coefficient refers to the mean percentile difference between adjusted posttest percentile ranks of Head Start children from the adjusted posttest percentile ranks of non-Head Start children.

See pages 8.8-8.9 for interpretive discussion of table entries.

## *THE PRESCOTT-SRI COMPOSITE VARIABLES*

Results of between-group analyses involving the composite Prescott-SRI variables are presented in Tables 8.14 through 8.25. Tables 8.14 through 8.19 consider Factor 1; Tables 8.20 through 8.25 consider Factor 2. As discussed in Chapter 7, these factors identify rather complicated variables that may be defined as follows:

- Factor 1 -- a standardized variable with a range of -3.0 to +3.0. The higher the score on this variable, the more a child's interactions are adult-oriented or adult-directed. The lower the score, the more a child's activities are directed toward objects or defined by structured activities (generally group activities).
- Factor 2 -- a standardized variable with a range of -3.0 to +3.0. The higher the score on this variable, the more a child engages in behaviors with his classmates as opposed to being passively involved in class activities. Behaviors with other children are both initiated by the focus child and directed toward the focus child. Behaviors are also generally those that are normatively acceptable rather than hostile or negative.

As indicated in Chapter 7, both these factors exhibit substantial pretest mean differences with respect to Head Start and non-Head Start enrollees. No doubt this reflects basic differences in Head Start and non-Head Start program structures. The former programs tend to have classes with larger enrollments, lower adult/enrollee ratios, and significantly lower handicapped child/non-handicapped child ratios. Therefore, that Head Start and non-Head Start enrollees exhibited different mean factor scores for the two composite variables described is not surprising. It is interesting, though, that in some respects these two variables, particularly Factor 2, closely approximate the essence of social behaviors one would hope for in a mainstream setting.

The analysis of posttest outcomes on these measures was conducted similarly to the analysis of the California Preschool Social Competency Scale. That is, the point of reference in Tables 8.14

through 8.25 is the non-Head Start sample. The pretest values of Factor 1 and 2 serve as the pretest outcome measure covariates. The variables in the covariate set are identical to those used in previous investigations reported in this chapter.

Inspection of those tables pertaining to Factor 1 (Tables 8.14 through 8.19) indicate significant treatment effects for all handicapped groups except the health impaired and mentally retarded groups. Even in these two exceptions, though, the trend is consistent -- adjusted posttest means of Head Start enrollees indicate decreases in the amount of interaction that is oriented toward or directed by adults relative to the non-Head Start group. In certain groups, notably the physically handicapped and the speech impaired, the incremental variance explained by the treatment set is substantial -- 6.2 percent and 9.6 percent, respectively. This should be tempered, though, by the fact that a significant amount of posttest variance remains unaccounted for.

Similar treatment effects are manifested with respect to Factor 2 (Tables 8.20 through 8.25). There are significant treatment effects for all handicapped groups, although the effect observed among the mentally retarded is compromised by the lack of regression homogeneity. For each handicap group the adjusted posttest score on Factor 2 is invariably higher among Head Start enrollees relative to the non-Head Start group. The increases in explained variance attributable to the treatment variables are again substantial, although the amount of unexplained posttest variance is also large. In general, though, these results indicate the Head Start enrollees, regardless of handicap, evidence increases in positive interactions with the classmates relative to non-Head Start enrollees.

The substantive significance of the results presented in Tables 8.14 through 8.25 are certainly subject to conjecture. It can reasonably be argued that these results are artifacts of opportunity; that is, the differences noted are mainly attributable to differences in program structures between Head Start and non-Head

## TABLE 8.14

## BETWEEN GROUPS ANALYSIS OF COVARIANCE: THE PRESCOTT-SRI FACTOR SCALE 1 FOR CHILDREN IDENTIFIED AS PHYSICALLY HANDICAPPED

| | | |
|---|---|---|
| Covariates | | $R^2$ = .2403 |
| Treatment | | $R^2$ = .3025 |
| Change in $R^2$ | | .0622 |
| F Value of Change in $R^2$ | | 9.988***<br>(df: 1,112) |
| Covariate/Treatment Interaction (F Value) | | 1.096<br>(df: 10,101) |
| Partial Regression Coefficient[1] | | |
| Head Start | $B._{Cov}$ | -.6518 |
| | SE | .2062 |

* Significant at the .1 level.

** Significant at the .05 level.

*** Significant at the .01 level.

[1] Point of reference: Number of Non-Head Start children identified as physically handicapped. Coefficient may be interpreted as the mean difference in Z scores of the adjusted posttest mean of the composite variable between Head Start and non-Head Start children.

See pages 8.8-8.9 for interpretive discussion of table entries.

## TABLE 8.15

### BETWEEN GROUPS ANALYSIS OF COVARIANCE: THE PRESCOTT-SRI FACTOR SCALE 1 FOR CHILDREN IDENTIFIED AS SPEECH IMPAIRED

| | | |
|---|---|---|
| Covariates | | $R^2$ = .2001 |
| Treatment | | $R^2$ = .2960 |
| Change in $R^2$ | | .0959 |
| F Value of Change in $R^2$ | | 20.16***<br>(df: 1,148) |
| Covariate/Treatment Interaction (F Value) | | 1.290<br>(df: 10,137) |
| Partial Regression Coefficient[1/] | | |
| Head Start | $B._{Cov}$ | -.9636 |
| | SE | .2147 |

---

* Significant at the .1 level.

** Significant at the .05 level.

*** Significant at the .01 level.

[1/] Point of reference: Number of Non-Head Start children identified as speech impaired. Coefficient may be interpreted as the mean difference in Z scores of the adjusted posttest mean of the composite variable between Head Start and non-Head Start children.

See pages 8.8-8.9 for interpretive discussion of table entries.

## TABLE 8.16

## BETWEEN GROUPS ANALYSIS OF COVARIANCE: THE PRESCOTT-SRI FACTOR SCALE 1 FOR CHILDREN IDENTIFIED AS MENTALLY RETARDED

| | | |
|---|---|---|
| Covariates | | $R^2 = .2574$ |
| Treatment | | $R^2 = .2589$ |
| Change in $R^2$ | | .0015 |
| F Value of Change in $R^2$ | | .230<br>(df: 1,148) |
| Covariate/Treatment Interaction (F Value) | | 1.317<br>(df: 10,137) |
| Partial Regression Coefficient[1/] | | |
| Head Start | $B._{Cov}$ | -.9830 |
| | SE | .1809 |

---

* Significant at the .1 level.

** Significant at the .05 level.

*** Significant at the .01 level.

[1/] Point of reference: Number of Non-Head Start children identified as mentally retarded. Coefficient may be interpreted as the mean difference in Z scores of the adjusted posttest mean of the composite variable between Head Start and non-Head Start children.

See pages 8.8-8.9 for interpretive discussion of table entries.

## TABLE 8.17

## BETWEEN GROUPS ANALYSIS OF COVARIANCE: THE PRESCOTT-SRI FACTOR SCALE 1 FOR CHILDREN IDENTIFIED AS HEALTH OR DEVELOPMENTALLY IMPAIRED

| | | |
|---|---|---|
| Covariates | | $R^2$ = .1478 |
| Treatment | | $R^2$ = .1488 |
| Change in $R^2$ | | .001 |
| F Value of Change in $R^2$ | | .095<br>(df: 1,81) |
| Covariate/Treatment Interaction (F Value) | | .506<br>(df: 10,70) |
| Partial Regression Coefficient[1/] | | |
| Head Start | $B_{\cdot Cov}$ | -.6868 |
| | SE | -.0402 |

* Significant at the .1 level.

** Significant at the .05 level.

*** Significant at the .01 level.

[1/] Point of reference: Number of Non-Head Start children identified as health or developmentally impaired. Coefficient may be interpreted as the mean difference in Z scores of the adjusted posttest mean of the composite variable between Head Start and non-Head Start children.

See pages 8.8-8.9 for interpretive discussion of table entries.

## TABLE 8.18

## BETWEEN GROUPS ANALYSIS OF COVARIANCE: THE PRESCOTT-SRI FACTOR SCALE 1 FOR CHILDREN IDENTIFIED WITH A SPECIFIC LEARNING DISABILITY OR AS SERIOUSLY EMOTIONALLY DISTURBED

| | | |
|---|---|---|
| Covariates | | $R^2$ = .1464 |
| Treatment | | $R^2$ = .1832 |
| Change in $R^2$ | | .0368 |
| F Value of Change in $R^2$ | | 3.694*<br>(df: 1,82) |
| Covariate/Treatment Interaction (F Value) | | 1.135<br>(df: 10,71) |
| Partial Regression Coefficient[1] | | |
| Head Start | $B._{Cov}$ | -.3160 |
| | SE | .1646 |

* Significant at the .1 level.

** Significant at the .05 level.

*** Significant at the .01 level.

[1] Point of reference: Number of Non-Head Start children identified with a specific learning disability or as seriously emotionally disturbed. Coefficient may be interpreted as the mean difference in Z scores of the adjusted posttest mean of the composite variable between Head Start and non-Head Start children.

See pages 8.8-8.9 for interpretive discussion of table entries.

## TABLE 8.19

## BETWEEN GROUPS ANALYSIS OF COVARIANCE: THE PRESCOTT-SRI FACTOR SCALE 1 FOR CHILDREN IDENTIFIED WITH OTHER[1] HANDICAPPING CONDITIONS

| | | |
|---|---|---|
| Covariates | | $R^2$ = .1994 |
| Treatment | | $R^2$ = .2796 |
| Change in $R^2$ | | .0802 |
| F Value of Change in $R^2$ | | 4.676**<br>(df: 1,42) |
| Covariate/Treatment Interaction (F Value) | | .528<br>(df: 9,32) |
| Partial Regression Coefficient[2] | | |
| Head Start | $B._{Cov}$ | -.6768 |
| | SE | .3130 |

* Significant at the .1 level.

** Significant at the .05 level.

*** Significant at the .01 level.

---

[1] The category "other" includes blind, visually impaired, deaf, and hearing impaired.

[2] Point of reference: Number of Non-Head Start children identified with other handicapping conditions. Coefficient may be interpreted as the mean difference in Z scores of the adjusted posttest mean of the composite variable between Head Start and non-Head Start children.

See pages 8.8-8.9 for interpretive discussion of table entries.

TABLE 8.20

## BETWEEN GROUPS ANALYSIS OF COVARIANCE: THE PRESCOTT-SRI FACTOR SCALE 2 FOR CHILDREN IDENTIFIED AS PHYSICALLY HANDICAPPED

| | | |
|---|---|---|
| Covariate | | $R^2$ = .3910 |
| Treatment | | $R^2$ = .4569 |
| Change in $R^2$ | | .0659 |
| F Value of Change in $R^2$ | | 13.590***<br>(df: 1,112) |
| Covariate/Treatment Interaction (F Value) | | 1.708*<br>(df: 10,101) |
| Partial Regression Coefficient[1] | | |
| Head Start | $B._{Cov}$ | .7109 |
| | SE | .1929 |

---

* Significant at the .1 level.

** Significant at the .05 level.

*** Significant at the .01 level.

[1] Point of reference: Number of non-Head Start children identified as physically handicapped. Coefficient may be interpreted as the mean difference in Z scores of the adjusted posttest mean of the composite variable between Head Start and non-Head Start children.

See pages 8.8-8.9 for interpretive discussion of table entries.

## TABLE 8.21

## BETWEEN GROUPS ANALYSIS OF COVARIANCE: THE PRESCOTT-SRI FACTOR SCALE 2 FOR CHILDREN IDENTIFIED AS SPEECH IMPAIRED

| | | |
|---|---|---|
| Covariates | | $R^2$ = .1098 |
| Treatment | | $R^2$ = .1499 |
| Change in $R^2$ | | .0401 |
| F Value of Change in $R^2$ | | 6.981***<br>(df: 1,148) |
| Covariate/Treatment Interaction (F Value) | | 1.042<br>(df: 10,137) |
| Partial Regression Coefficient[1/] | | |
| Head Start | $B._{Cov}$ | .6364 |
| | SE | .2408 |

---

* Significant at the .1 level.

** Significant at the .05 level.

*** Significant at the .1 level.

[1/] Point of reference: Number of Non-Head Start children identified as speech impaired. Coefficient may be interpreted as the mean difference in Z scores of the adjusted posttest mean of the composite variable between Head Start and non-Head Start children.

See pages 8.8-8.9 for interpretive discussion of table entries.

## TABLE 8.22

## BETWEEN GROUPS ANALYSIS OF COVARIANCE: THE PRESCOTT-SRI FACTOR SCALE 2 FOR CHILDREN IDENTIFIED AS MENTALLY RETARDED

| | | |
|---|---|---|
| Covariates | | $R^2 = .1350$ |
| Treatment | | $R^2 = .3032$ |
| Change in $R^2$ | | .1782 |
| F Value of Change in $R^2$ | | 37.849***<br>(df: 1,148) |
| Covariate/Treatment Interaction (F Value) | | 3.097***<br>(df: 10,137) |
| Partial Regression Coefficient[1] | | |
| Head Start | $B._{Cov}$ | .9960 |
| | SE | .1667 |

---

* Significant at the .1 level.

** Significant at the .05 level.

*** Significant at the .01 level.

[1] Point of reference: Number of Non-Head Start children identified as mentally retarded. Coefficient may be interpreted as the mean difference in Z scores of the adjusted posttest mean of the composite variable between Head Start and non-Head Start children.

See pages 8.8-8.9 for interpretive discussion of table entries.

TABLE 8.23

BETWEEN GROUPS ANALYSIS OF COVARIANCE:
THE PRESCOTT-SRI FACTOR SCALE 2 FOR
CHILDREN IDENTIFIED AS HEALTH OR
DEVELOPMENTALLY IMPAIRED

| | | |
|---|---|---|
| Covariates | | $R^2 = .1519$ |
| Treatment | | $R^2 = .2713$ |
| Change in $R^2$ | | .1194 |
| F Value of Change in $R^2$ | | 13.272***<br>(df: 1,81) |
| Covariate/Treatment Interaction (F Value) | | .429<br>(df: 10,70) |
| Partial Regression Coefficient[1] | | |
| Head Start | $B._{Cov}$ | 1.0596 |
| | SE | .2909 |

---

* Significant at the .1 level.

** Significant at the .05 level.

*** Significant at the .01 level.

[1] Point of reference: Number of Non-Head Start children identified as health or developmentally impaired. Coefficient may be interpreted as the mean difference in Z scores of the adjusted posttest mean of the composite variable between Head Start and non-Head Start children.

See pages 8.8-8.9 for interpretive discussion of table entries.

## TABLE 8.24

## BETWEEN GROUPS ANALYSIS OF COVARIANCE: THE PRESCOTT-SRI FACTOR SCALE 2 FOR CHILDREN IDENTIFIED WITH A SPECIFIC LEARNING DISABILITY OR AS SERIOUSLY EMOTIONALLY DISTURBED

| | | |
|---|---|---|
| Covariates | | $R^2 = .1808$ |
| Treatment | | $R^2 = .2187$ |
| Change in $R^2$ | | .0380 |
| F Value of Change in $R^2$ | | 3.961**<br>(df: 1,82) |
| Covariate/Treatment Interaction (F Value) | | 1.309<br>(df: 10,71) |
| Partial Regression Coefficient[1/] | | |
| Head Start | $B._{Cov}$ | .5178 |
| | SE | .2597 |

---

* Significant at the .1 level.

** Significant at the .05 level.

*** Significant at the .01 level.

[1/] Point of reference: Number of Non-Head Start children identified with a specific learning disability or as seriously emotionally disturbed. Coefficient may be interpreted as the mean difference in Z scores of the adjusted posttest mean of the composite variable between Head Start and non-Head Start children.

See pages 8.8-8.9 for interpretive discussion of table entries.

## TABLE 8.25

## BETWEEN GROUPS ANALYSIS OF COVARIANCE: THE PRESCOTT-SRI FACTOR SCALE 2 FOR CHILDREN IDENTIFIED WITH OTHER[1] HANDICAPPING CONDITIONS

| | | |
|---|---|---|
| Covariates | | $R^2$ = .2087 |
| Treatment | | $R^2$ = .2841 |
| Change in $R^2$ | | .0754 |
| F Value of Change in $R^2$ | | 4.424**<br>(df: 1,42) |
| Covariate/Treatment Interaction (F Value) | | 1.530<br>(df: 9,32) |
| Partial Regression Coefficient[2] | | |
| Head Start | $B._{Cov}$ | .7113 |
| | SE | .3382 |

* Significant at the .1 level.

** Significant at the .05 level.

*** Significant at the .01 level.

---

[1] The category "other" includes blind, visually impaired, deaf, and hearing impaired.

[2] Point of reference: Number of Non-Head Start children identified with other handicapping conditions. Coefficient may be interpreted as the mean difference in Z scores of the adjusted posttest mean of the composite variable between Head Start and non-Head Start children.

See pages 8.8-8.9 for interpretive discussion of table entries.

Start programs. One could also argue that the composite Prescott-SRI variables are not relevant outcome measures for a between-groups evaluation because they are post-hoc constructs that cannot be considered as legitimate goals of any of the programs in the study. Finally, one could ask whether gains or losses on these measures are desirable or undesirable.

That these variables are post-hoc constructs and cannot directly be considered as program goals is an unavoidable consequence of using composite variables as outcome measures. However, Tables 8.26 and 8.27 have been developed to address the other reservations that might exist about the composite outcome variables used in this evaluation. Table 8.26 examines mean factor pretest and posttest scores by program structure as defined by a summary code developed by SRI International for use in interpreting results of the Prescott-SRI Child Observation System. This code has five values:

1. Free choice

   The focus child is allowed to choose any activity available in the center, without being directed to one particular activity. The activities may or may not be organized previously by adults; the criteria for use of this code are that the child may choose the activity and that no structured schedule is followed.

2. Routine of the center

   During the observation, the focus child is involved in the routine activities of the center, including activities related to orderly maintenance of the center, as well as children's snack time, toileting, and transitional periods.

3. Teacher-directed individual activity

   The focus child is engaged in an activity supervised by an adult, and no other children are present. A schedule is followed and the child is expected to remain in the activity until dismissed by the adult.

4. Teacher-directed group activity

   The focus child is part of a group of children who are involved in an activity directed by an adult. The focus child has been told to participate in the activity and is expected to remain in the activity until dismissed by the adult.

5. No code applies 75% of the period

   Use this code if the focus child is not involved in one of the four activities for at least 15 minutes of the observation period.

As the data in Table 8.26 indicate, there is very little difference in the relative occurences of activity structure codes between Head Start and Non-Head Start programs. Those differences that do obtain, though, indicate a relatively greater proportion of observations conducted in non-Head Start programs in which the activities were teacher-directed and involved only the focus child( 6.2% vs. 11.3% of all observation sessions, Head Start and non-Head Start respectively). This difference is consistent with the hypothesis that opportunity is responsible for the between-group differences noted in the two Prescott-SRI composite variables. However, because of the overall low frequency of observations involving this type of program activity, it is doubtful that program differences with respect to the composite variables are to any substantial degree a function of differential opportunity.

Table 8.27 examines the correlations between the posttest Prescott-SRI composite variable scores and the subscale posttest scores for the Alpern-Boll Developmental profile partialling out the pretest values for those variables plus severity of handicap and chronological age. None of the partial correlations are particularly high. All but two, however, are statistically significant at the 0.05 level of probability or better. Further, the correlations between the first composite variable and posttest development ages are consistently negative. They are consistently positive for the second composite variable. The substantive significance of these relationships aside, it can be stated that the Prescott-SRI composite variables are significantly,

## TABLE 8.26

## ACTIVITY STRUCTURE OBSERVED DURING IN-CLASS OBSERVATIONS

| Activity Structure | Head Start % of Observations[1] | Non-Head Start % of Observations |
|---|---|---|
| Free Choice | 21.1 | 20.7 |
| Routine of Center | 17.6 | 12.9 |
| Teacher-Directed Individual Activity | 6.2 | 11.3 |
| Teacher-Directed Group Activity | 39.7 | 38.8 |
| No Applicable Code | 15.1 | 16.2 |
|  | 100.0* | 100.0* |

---

[1] An observation is one twenty-minute observation period. Each focus child was observed for ten sessions.

* Rounded figures.

## TABLE 8.27

## PARTIAL CORRELATIONS BETWEEN POSTTEST PRESCOTT-SRI COMPOSITE VARIABLES AND POSTTEST ALPERN-BOLL DEVELOPMENTAL PROFILE SUBSCALES CONTROLLING FOR AGE, HANDICAP SEVERITY, AND PRETEST SCORES

| Alpern-Boll Schedule | Composite Variable 1 | Composite Variable 2 |
|---|---|---|
| Physical Age | -.09** | .156** |
| Self-help Age | -.06 | .096** |
| Social Age | -.078* | .138** |
| Academic Age | -.107** | .056 |
| Communication Age | -.074* | .094** |

** Significant at .01 level

* Significant at .05 level

albeit weakly, associated with child outcomes that can reasonably be expected to be program goals for any program, Head Start or non-Head Start, that provides services to handicapped children. Consequently, examination of between-groups treatment effects vis-a-vis these composite variables may be considered appropriate.

## Summary

The preceding analyses of differential "treatment" effects generally indicated that few statistically significant differences were in evidence whether comparisons were between Head Start and non-Head Start enrollees, or among Head Start, non-Head Start, and non-served children. However, certain analyses did provide results which merit consideration:

- Children identified as speech impaired in Head Start and non-Head Start programs manifested statistically significant developmental gains in physical, self-help, academic and communication skills relative to non-served children. Developmental gains among Head Start speech impaired children were comparable to those among children in non-Head Start programs. Each group evidenced gains of almost six months in communication age relative to non-served speech impaired children. A summary of developmental gains by all handicapping conditions is presented in Table 8.28.
- After adjusting for pre-existing sample differences, it was noted that developmental gains among handicapped children in Head Start were often larger than those of children in non-Head Start programs. This was particularly so for children identified as mentally retarded, health or developmentally impaired, and learning disabled or seriously emotionally disturbed. Across all handicapping conditions, Head Start children exhibited consistently greater gains than non-Head Start children in self-help skills and academic skills. This conclusion would be tempered, though, by the fact that the non-Head Start sample was generally a more severely impaired group of children, and it is not certain that this pre-existing difference between samples was completely accounted for in analytical undertakings. Further, with few exceptions, differences between Head Start and non-Head Start study groups were not statistically significant.

## TABLE 8.28

## SUMMARY OF HEAD START/NON-HEAD START DEVELOPMENTAL GAINS ON THE SUBSCALES OF THE ALPERN-BOLL DEVELOPMENTAL PROFILE

| Handicapping Condition | Physical Age | | Self-Help Age | | Social Age | | Academic Age | | Communication Age | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Head Start | Non-Head Start | Head Start | Non-Head Start | Head Start | Non-Head Start | Head Start | Non-Head Start | Head Start | Non-Hea Start |
| Physically Handicapped | 0 | 0 | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Speech Impaired | + | + | + | + | 0 | 0 | + | 0 | + | + |
| Health or Developmentally Impaired | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Mentally Retarded | + | 0 | + | 0 | 0 | 0 | + | + | + | 0 |
| Learning Disabled/* Seriously Emotionally Disturbed | + | n/a | 0 | n/a | 0 | n/a | + | n/a | 0 | n/a |
| "Other" Handicaps* | 0 | n/a | 0 | n/a | + | n/a | 0 | n/a | 0 | n/a |

+ = developmental gains greater than those of the non-served control group which are significant at least the .1 level (Note * below).

0 = developmental gains comparable to those of the non-served control group (Note * below).

* gains relative to non-Head Start group; non-served control group inappropriate reference.

- Head Start children showed less adult oriented behavior and more positive child interactions than their non-Head Start peers over the course of the program year. Positive child interactions were associated, albeit weakly, with gains in developmental progress whereas adult centered behaviors were unrelated to positive developmental outcomes.

As noted in several places in this report, a complicated study design and fallible covariates demand caution in the interpretation of between-groups analyses. Nevertheless, the consistency of analytical results invites summarization at two levels. First, it can be concluded with reasonable confidence that *over the course of this study*, benefits of program participation for handicapped children were comparable between Head Start and alternative preschool placements. That is, handicapped children in Head Start exhibited gains that were comparable to those of children served in non-Head Start programs.

At a second level, the consistency with which Head Start children showed developmental gains beyond those for children in non-Head Start programs may indicate that at least for certain handicapped children, Head Start may be a better placement. Taking this interpretation one step further, the differential effects noted between Head Start and non-Head Start programs *vis-a-vis* the Prescott-SRI composite variables and the relationship of these composite variables to development outcomes suggests that the reason for the consistent difference between programs may be Head Start's emphasis on mainstreaming.[1]

This latter interpretation of the results presented in this chapter is subject to other possible explanations (e.g., the issue of differential severity). However, the data are consistent with and support the proposition that mainstreaming may make a difference, and this is in itself noteworthy. It is a finding which, when considered in the context of other research into programs for the handicapped, further reinforces the desirability of serving special children in the least restrictive environment possible.

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[1] As noted previously, Head Start programs invariably mainstream handicapped children whereas mainstreaming was not practiced to any significant extent among non-Head Start programs.

# 9

# WITHIN-GROUP ANALYSES

The Phase II evaluation of the Head Start mainstreaming effort was not only directed at discerning possible differential treatment effects for handicapped enrollees between Head Start and other service alternatives (or lack of such alternatives). The evaluation effort was also intended to identify, if possible, the specific variables within Head Start programs that were associated with positive child outcomes. The broad study questions governing this investigation were presented in Chapter 1:

- Within Head Start programs, what variables explain differential progress among handicapped children?
- Do variables that account for developmental progress among children enrolled in Head Start differ from those that account for progress among children enrolled in non-Head Start programs?

The purpose of this chapter is to present the results of these within-group investigations. As in the preceding chapter, within-group analyses were conducted for each of the handicapped groups and considered three outcome measures--the Alpern-Boll Developmental Profile, the California Preschool Social Competency Scale, and the Prescott-SRI composite variables.

## Expected Versus Actual Posttest Outcomes: The Problem of Maturation

Over a given period of time, it is reasonable to expect that a handicapped child will exhibit developmental progress simply as a function of maturation. That is, the difference between a child's pretest developmental level and posttest developmental level will, in part, be a function of physiological, psychological, and socio-emotional maturation. In estimating the effects of a given treatment, allowance must be made for such maturation.

Maturation was only tangentially addressed in the preceding chapter because the nature of the study questions addressed by the between-groups analyses did not require careful attention to this issue. All that was involved in these analyses was an investigation as to whether outcome measures differed among groups, all other factors being equal. Presumably, if differences obtained, these differences were adjusted for those variables that would impact differential rates of maturation. Moreover, comparisons of treatment groups with the non-served control group implicitly accepted posttest outcomes of the non-served group as a standard against which to demonstrate treatment gains that were greater than those expected through maturational processes.

For within-group analyses, though, the issue of maturation is more significant. In general, there is no point of reference built into these analyses that allows an assessment of gains due to treatment versus gains due to maturation. Therefore, a critical first step in undertaking within-group analyses is to define an expected posttest outcome that is due simply to normal maturational processes.

For two of the outcome measures utilized in this evaluation, this task poses no particular problems. The California Preschool Social Competency Scale is normed for age, sex, and parent's occupational status. In the absence of treatment effects, the best estimate of the expected posttest percentile rank for a given child is his/her pretest percentile rank.1/ In the case of the Prescott-SRI composite variables, it is assumed that pretest/posttest differences observed for the Prescott-SRI composite variables will be due to the impact, directly and perhaps indirectly.

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1/ It is worthwhile to recall that the point of reference for interpreting percentile ranks for the California Preschool Social Competency Scale is the population of non-handicapped preschool-age children.

of the "treatment" the child experiences. Over a brief six month period, this is a reasonable assumption to make.

However, the maturation problem does arise with respect to the interpretation of pretest/posttest differences on the Alpern-Boll Developmental Profile. Because this instrument addresses skills and behaviors that are developmentally sequenced, it should be anticipated that even in a six-month period of time, any given child will exhibit some growth without the benefit of a program of services. To examine aspects of a treatment that promote growth beyond that due to maturation, some estimate of the maturational effect must be developed and controlled for.

The issue of maturation in the evaluation of program impact has received considerable attention in recent years largely due to methodological shortcomings of early Title I evaluations (Stenner, et al, 1976). The U.S. Office of Education, through a contract with Resource Management Corporation, has explored three basic models for estimating maturation, or "no treatment," effects. These models are the norm-referenced model, the control groups model, and the various regression models (Stenner, et al, 1976, p. 40).

Unfortunately, an impact evaluation of a program serving handicapped children precludes the use of any of the techniques that use normative data to estimate maturation effects.[1/] There currently exists no body of data that could serve to norm developmental growth for handicapped children, nor are such data likely to be available. The reason for this is that maturational development for handicapped children is uniquely constrained by the nature of a child's particular handicap to such an extent that it would be

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[1/] Again, the California Preschool Social Competency Scale is an exception because non-handicapped children were deliberately selected as the relevant point of reference. Using non-handicapped norms with the Alpern-Boll Developmental Profile would be inappropriate for the reasons cited.

difficult to establish growth curves or developmentally-sequenced skills/behaviors that would be valid for most handicapping conditions.[1] One only has to consider the age-adjusted range of skills and abilities among Down's Syndrome or cerebral palsy children to appreciate this point.[2]

Therefore, efforts made within the context of this evaluation to estimate expected maturational growth utilized the control groups model and various regression models. These models are described below.

### *HISTORICAL REGRESSION*

Historical regression assumes that in the absence of a specific treatment, a child's posttest outcome on a given measure will equal the pretest mean plus a defined rate of growth multiplied by the length of time between the pretest and posttest (Hick and Irvine, 1978). In regression terms, this model may be defined as follows:

$$\hat{Y}_2 = a + b_1 Y_1 + b_2 R + e$$

where

$\hat{Y}_2$ = expected posttest score
$a$ = a constant (0 in this instance)
$Y_1$ = pretest score
$R$ = $Y_1$/chronological age x time between pretest/posttest
$b_1, b_2$ = regression coefficients ($b_1 = 1$; $b_2 = 1$ in this special case)
$e$ = error

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[1] It is for this reason, for example, that triple-ceiling cutoffs were used to establish developmental ages for the Alpern-Boll Developmental Profile.

[2] It is conceivable that for handicaps with narrowly-considered etiologies that growth curves could be developed. However, such curves would not be appropriate for differing etiologies and meaningless for comparisons across handicaps.

The historical regression model is relatively straightforward and has a certain intuitive appeal. The technique also avoids difficulties in defining severity of a child's handicap in that the child's rate of development implicitly incorporates severity into the calculations.[1/] As noted by critics of this procedure, however, the historical regression model generally has a larger error term than alternative least squares regression techniques, and of all the techniques considered in this evaluation, it consistently had the largest variance of posttest estimates. It also assumes a constant linear rate of development, although non-linear trends do not seem too important in the short-term development of children considered in this study (see Chapter 8).

### *LEAST SQUARES PREDICTIVE MODEL*

Another approach used to estimate expected maturation was to determine which variables best "explain" pretest developmental age. Once this regression equation was identified, the pretest values for these variables were entered into the equation to predict an expected posttest outcome. Sample sizes were too small within handicapping conditions to permit cross-validation. However, similar prediction equations developed for the aggregate study groups were cross-validated and exhibited reasonable coefficient stability and predictive accuracy.

The major drawback of the least squares predictive model is that considerable unexplained variation remains in the predicted outcomes. Explained posttest variance ranged between 30 and 50 percent, depending on the handicap in question. How much of the unexplained variation is due to measurement error, how much to treatment effects, and how much to variables outside the equation cannot be established.

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[1/] In other words, rate of development at pretest may be considered, in part, an alternative approach to the measurement of severity, although severity is imbedded in the developmental rate with all other personal characteristics of the child and his/her family that may be expected to impact posttest outcomes.

### *RESIDUAL (COVARIANCE) MODEL*

The last of the regression models used to estimate treatment effects is the residual model. Mechanically, it is simply an elaboration of the predictive model in that the same variables are utilized with the addition of the pretest developmental age for the particular Alpern-Boll subscale under consideration. The variables used in these equations were the same as those that defined the covariate set for between-group analyses.

While mechanically this model is very similar to what has been referred to as the predictive model, conceptually they are quite different. In the residual model, expected maturation is the proportion of posttest variance that can be explained by pretest developmental ages and background variables. In the predictive model, as indicated, variables associated with a pretest developmental age are used to predict a posttest outcome.

Aside from a more general criticism that the residual model confounds measurement error with treatment effects, there is another criticism of this method which should also be noted. To the extent that program services to the handicap stress the importance of parental involvement in program activities it is reasonable to assume that treatment effects are mediated, in part, by a child's home environment and socio-economic background. The residual model incorporates many variables relating to a child's home environment and socio-economic background in estimating expected "no treatment" developmental growth. Consequently, a proportion of developmental growth that may be treatment effects mediated by family background characteristics may be identified as expected maturation.[1]

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[1] Technically, this problem is one in which an outcome is residualized for certain variables and then the same variables are used to explain residual variance. Because residuals are uncorrelated with independent (predictor) variables, one would expect the same set of independent variables to have no explanatory relationship with the residualized outcome variable, even though theoretically such relationships should exist.

### *THE CONTROL GROUP MODEL*

The final method used in this evaluation to estimate expected maturation was to assume that whatever developmental growth was observed among children in the non-served control group would be the expected "no treatment" growth among children enrolled in programs of services. This model was implicitly used in most of the between-groups analyses presented in Chapter 8. This approach to estimating "no treatment" effects also has a degree of intuitive appeal, but its validity depends upon the comparability of children in the non-served control group with the Head Start and non-Head Start children.

Each of the four methods of estimating "no treatment" effects was applied to data for physically handicapped and speech impaired children aggregated by study group. The results of these methods are presented in Appendix C. In general, the estimated expected "no treatment" outcome for all four methods are surprisingly similar. With few exceptions, each method predicted an expected mean posttest outcome for each Alpern-Boll Developmental Subscale within ± 2 months of the actual mean posttest outcomes. The major exception was the communication skills subscale for the speech impaired children in which three of the four methods predicted "no treatment" outcomes that are three to four months less than the actual mean outcome. This was anticipated, however, based on results presented in Chapter 8.

## Definition of the Dependent Variable Gainers

The selection of which of the four methods described above to estimate "no treatment" posttest outcomes posed difficult conceptual as well as methodological problems. Each of the methods has disadvantages which could damage the validity of within-group analyses. Consequently, the decision was made to define a dependent outcome for within-group analyses that utilized all four methods. This was done by standardizing the expected "no treatment" outcomes predicted by each method (Z scores). The actual posttest outcomes for each Alpern-Boll Developmental Profile were also standardized. The difference between the standardized actual outcome and each of the standardized expected outcomes was computed and if the difference was positive (Z actual - Z expected) in each of the four calculations, the child was considered to be a "gainer." Children not meeting this criterion were assigned to a category that can best be described as containing children with no or doubtful gains as a result of program participation.

The advantage of this approach to defining a dependent outcome is that it is conservative. While all four methods of predicting expected "no treatment" gains have limitations, a child who consistently exhibits gains beyond expected maturation irrespective of the estimation technique utilized can be reasonably assumed to have measurably benefitted from his/her program of services.

Considerable discussion was generated about the decision to define a dichotomous dependent variable rather than averaging the residual gains from each of the four previously mentioned methods for estimating maturational growth. This latter technique would have maintained an intervally scaled dependent outcome and would have permitted the use of more familiar analytical techniques such as least squares regression. There were two primary reasons why the dichotomization approach was selected. First, the dependent outcome derived from the averaging technique would have been susceptible to extreme gains or losses resulting from any one of the estimating procedures utilized. Because of the flaws inherent in each of these estimating techniques, the meaningfulness of the magnitude of residual gains or losses would be suspect. Consequently, the authors believed that regression coefficients estimated in this particular circumstance might have been misleading. The strength of the dichotomization approach is that it only considers the consistency of residual gains, not their potentially flawed magnitudes.

The second reason for dichotomizing the outcome variables was that if the averaging technique had been utilized, the relative contribution of various independent variables in explaining outcome variance would be based, in part, on a number of children for whom actual posttest gains were less than expected gains. This raises a conceptual problem, because it is not clear that it makes sense to associate treatment variables with children who are effectively "losers." The assumption here is that participation in a program of services will result in outcomes that are no less than those expected through maturation processes. Granted there are some children who may be hurt by an inappropriate program placement and consequently their development might be less than it would have been without the program experience. It is the author's belief, however, that most programs are no worse than benign.

Therefore, the appropriate focus of an investigation of those aspects of a given treatment that are associated with positive child outcomes should not consider children who, for one reason or another, exhibit so-called developmental losses. Rather, the focus should be on those children who exhibit positive outcomes versus those who exhibit no development beyond expected maturation.[1/] This analytical focus, and the previously mentioned concern with the meaningfulness of the magnitude of the differences between expected and actual outcome variables, weigh against the use of the averaging technique for defining outcomes and argue in favor of the dichotomization approach.[1/]

It would have been preferable, of course, if both approaches could have been adopted and the results of the different analyses compared. Time and resources precluded such a comparison, and it

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[1/] For the purposes of this report, children who exhibited developmental losses were considered to be "no gainers," that is, their development did not exceed expected maturation. Specific analysis of developmental "losers" was not undertaken for the reasons specified.

must be left for future analysis to determine the relative merits of various potential within group analytical strategies.[1]

## Analytical Approach

Because the dependent variable is nominal, analytical techniques used in Chapter 8 are inappropriate for within-group analyses. Instead, analyses in this chapter utilize a two-group discriminant analysis.

Tables that present the results of the discriminant analyses have several entries which warrant some elaboration. The first entry in these tables identifies the set of variables which maximally distinguishes children who benefit from their program of experiences versus those who do not. Each variable identified is accompanied by its standardized discriminant coefficient. These coefficients may be interpreted much like regression coefficients in that the larger the value of the coefficient, the more important it is for distinguishing "gainers" from "no gainers."

The sign of the coefficient also indicates the direction of the variable's impact, but the sign of the variable must be considered in conjunction with the sign of the group centroid presented as the third entry on the data tables. These centroids determine the interpretation of the signs of the discriminant coefficients. For example, if the centroid is negative and a particular coefficient is negative, then the greater the value of variable for which the coefficient was estimated the more likely the individual will be associated with the group with the negative centroid.

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[1] A limited comparative analysis was undertaken to determine if substantially different results would obtain if the averaging technique had been utilized. In general, least squares regression analysis with the outcome variable defined as an average residual gain resulted in the identification of similar variables as the analyses presented in this chapter. However, few of the regressions were statistically significant indicating a general inability of this analytical technique to meaningfully link treatment variables to developmental outcomes.

Another data element of importance in these tables is Wilk's Lambda. This statistic measures the degree to which a given variable set can discriminate between two or more groups. Wilk's Lambda ranges in value from 1 to 0, and the smaller the value, the greater the distinction between the groups in question. The statistical significance of Wilk's Lambda is also presented ($X^2$). It should be noted, though, that values of Wilk's Lambda exceeding .8 indicate relatively little separation between groups that would be of substantive importance.

Following the Wilk's Lambda statistic is the square of the canonical correlation coefficient between the variable set considered in respective discriminant functions and the group membership dummy variables. This coefficient may be interpreted as the proportion of the variance in the canonical variate defined by the discriminant functions that is explained by the group membership variables. The larger the value of the squared canonical correlation coefficient, which ranges from 0 to +1, the better the ability of the function to discriminate between "gainers" and "no gainers".

Finally, the last entry in these tables is a series of 2x2 tables that indicates how well discriminant equations predict actual group membership. The stub and banner headings for these tables refer to the study groups under investigation (1 = "gainers"; 2 = "no gainers").

### *ALPERN-BOLL DEVELOPMENTAL PROFILE - BACKGROUND CHARACTERISTICS*

Tables 9.1 through 9.8 present the results of the within-group discriminant analyses for handicapped children enrolled in Head Start and non-Head Start programs with respect to background variables. The background variables considered in these analyses included:

- severity of handicap
- presence of multiple handicaps
- number of siblings
- previous program experience
- chronological age
- ethnicity
- sex
- mother's education/occupation
- father's education/occupation
- family income
- pretest score on the High/Scope Home Environment Scale

Because of small sample sizes, discriminant analyses are not reported for the two aggregated handicap groups--the "other" category and the learning disabled/emotionally disturbed group.[1]

As the results in Tables 9.1 through 9.4 indicate, background variables do permit statistically significant discrimination between Head Start "gainers" (Group 1) and "no gainers" (Group 2) for almost all subscales of the Alpern-Boll Developmental Profile. However, the degree to which background variables can effectively discriminate between these two groups is minimal substantively. Not only does Wilk's Lambda rarely fall below .80, there are few consistent patterns with respect to those variables identified in each of the discriminant functions developed.

There are, however, several outcomes from these discriminant analyses that deserve special attention. First is the fact that handicap severity is not a particularly strong discriminating variable among Head Start "gainers" and "no gainers." Despite the measurement problems associated with this variable and acknowledging the weakness of the discriminant analyses as a whole, it is still somewhat surprising that this variable appears as a significant differentiating variable in only 4 of the 20 analyses conducted among the Head Start samples. A second noteworthy point is the frequency with which father-related variables appear in the Head Start analyses. Father's education and/or occupation is an important variable in 15 of 20 Head Start analyses, while this is so for mother-related variables in 12 of 20 Head Start analyses.[2]

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[1] Analyses were undertaken for these two groups and results were comparable to those presented for the handicapping conditions represented in Tables 9.1 through 9.8. However, results were considered too unstable for inclusion in this report.

[2] The problem of multicollinearity is recognized here. However, given the step-wise solution utilized for discriminant analyses, one would anticipate the predominance of mother-related variables given the sequence in which these variables were analyzed.

The significance of these two general observations is diminished by previously recognized problems of small sample sizes. However, that severity is not an important variable in these analyses suggests that "gainers" are not necessarily those with mild, transitory impairments. The prevalence of father-related variables is interesting in that education research has traditionally emphasized the characteristics of the mother as important considerations in realizing the intended objectives of programs of services. These data do not in any way refute the validity of that emphasis but rather suggest that at least for handicapped children in Head Start, the role of the father should be considered co-equally. In practical terms, it may be that Head Start parent involvement/training activities should be examined with respect to the role of the father in these efforts. If Head Start programs consistently establish parental involvement activities that emphasize the maternal role in child development and parent activities, some effort may be in order to attempt to more actively involve both parents.[1/]

Tables 9.5 through 9.8 present the results of discriminant analyses for children in non-Head Start programs. As in the case of the Head Start analyses, the discriminant functions developed for the non-Head Start groups are weak statistically and substantively. In fact, several of the non-Head Start analyses result in standardized discriminant function coefficients that approach or exceed a value of 1.0 indicating serious shortcomings in the functions developed. Consequently, interpretation of these results must be considered with extreme caution.

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[1/] This is not to suggest that Head Start parent programs are designed solely or even primarily with the mother in mind. Parent involvement in Head Start is a "total family" concept. However, Phase I site visits left field staff with the impression that for one reason or another, parental involvement was largely mother-oriented.

TABLE 9.1

## WITHIN GROUPS DISCRIMINANT ANALYSIS FOR HEAD START CHILDREN IDENTIFIED AS PHYSICALLY HANDICAPPED - BACKGROUND VARIABLES

### ALPERN-BOLL DEVELOPMENTAL PROFILE

| | Physical Age | Self-Help Age | Social Age | Academic Age | Communication Age |
|---|---|---|---|---|---|
| Variables in the Discriminant Function[1/] | Siblings (-.382)<br>Male (-.473)<br>Father's Education (.603)<br>Father's Occupation (-.864)<br>Home Environ. (-.554) | Siblings (.469)<br>Multiple Handicapped (.454)<br>Black (.532)<br>Male (-.351)<br>Father's Education (.525) | NSF | Siblings (-.517)<br>Male (-.410)<br>Prior Program Experience (.589)<br>Home Environ. (.502) | Mother's Education (.4<br>Father's Education (.8<br>Home Environ. (.7 |
| Wilk's Lambda | .819 | .808 | | .864 | .883 |
| $\chi^2$ | 11.685*<br>(df:5) | 12.725**<br>(df:5) | | 9.558*<br>(df:5) | 6.293*<br>(df:5) |
| Canonical $R^2$ | .181 | .192 | - | .135 | .117 |
| Group Centroids: Group 1 Gainers | .694(n=17) | .544(n=25) | | -.599(n=19) | -.442 (n=20) |
| Group 2 No Gainers | .257(n=46) | -.349(n=39) | | .223(n=51) | .260 (n=34) |

**Physical Age**

| Actual | Predicted 1 | Predicted 2 |
|---|---|---|
| 1 | 6 | 11 |
| 2 | 3 | 43 |

**Self-Help Age**

| Actual | Predicted 1 | Predicted 2 |
|---|---|---|
| 1 | 11 | 14 |
| 2 | 8 | 31 |

**Social Age**

| Actual | Predicted 1 | Predicted 2 |
|---|---|---|
| 1 | - | - |
| 2 | | |

**Academic Age**

| Actual | Predicted 1 | Predicted 2 |
|---|---|---|
| 1 | 3 | 16 |
| 2 | 3 | 48 |

**Communication Age**

| Actual | Predicted 1 | Predicted 2 |
|---|---|---|
| 1 | 9 | 11 |
| 2 | 6 | 28 |

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[1/] Standardized discriminant coefficients in parentheses

* = p < .1
** = p < .05
*** = p < .01

See pages 9.10-9.11 for a discussion of the interpretation of table entries.

### TABLE 9.2

### WITHIN GROUPS DISCRIMINANT ANALYSIS FOR HEAD START CHILDREN IDENTIFIED AS SPEECH IMPAIRED - BACKGROUND VARIABLES

### ALPERN-BOLL DEVELOPMENTAL PROFILE

| | | Physical Age | Self-Help Age | Social Age | Academic Age | Communication Age |
|---|---|---|---|---|---|---|
| Variables in the Discriminant Function[1/] | | Severity (.263)<br>Siblings (-.616)<br>Multiple handicap (.42)<br>White (-.6)<br>Male (-.23)<br>Mother's Occup. (-.29)<br>Father's Occup. (-.28)<br>Income (-.3)<br>Home Environ. (.36) | Age (.499)<br>White (.343)<br>Black (.546)<br>Male (.425)<br>Previous Program Experience (-.253) | Severity (.299)<br>Age (-.499)<br>White (-.55)<br>Black (-.60)<br>Male (-.251)<br>Mother's Educ. (-.838)<br>Mother's Occup. (.40) | Multiple Handicap (-.277)<br>Father's Education(-1.0)<br>Mother's Occupation(-.426)<br>Father's Occupation(.78) | Mother's Education (.7<br>Father's Education (<br>Income (.5 |
| Wilk's Lambda | | .776 | .789 | .811 | .87 | .91 |
| $\chi^2$ | | 23.12*** (df=9) | 19.76*** (df=9) | 18.0** (df=7) | 12.79** (df=4) | 7.74* (df=3) |
| Canonical $R^2$ | | .224 | .210 | .188 | .121 | .087 |
| Group Centroids | Group 1 Gainers | .78(n=26) | -.751(n=24 | .62(n=30) | .50(n=33) | -.399(n=31) |
| | Group 2 No Gainers | -.28(n-72) | .277(n=65) | -.30(n=62) | -.237(n=70) | .217(n=57) |

Predicted

| Actual | 1 | 2 |
|---|---|---|
| 1 | 9 | 17 |
| 2 | 6 | 66 |

Predicted

| Actual | 1 | 2 |
|---|---|---|
| 1 | 8 | 16 |
| 2 | 5 | 60 |

Predicted

| Actual | 1 | 2 |
|---|---|---|
| 1 | 11 | 19 |
| 2 | 6 | 56 |

Predicted

| Actual | 1 | 2 |
|---|---|---|
| 1 | 5 | 28 |
| 2 | 1 | 69 |

Predicted

| Actual | 1 | 2 |
|---|---|---|
| 1 | 9 | 22 |
| 2 | 3 | 54 |

---

[1/] Standardized discriminant coefficients in parentheses

* = $p < .1$
** = $p < .05$
*** = $p < .01$

See pages 9.10-9.11 for a discussion of the interpretation of table entries.

TABLE 9.3

## WITHIN GROUPS DISCRIMINANT ANALYSIS FOR HEAD START CHILDREN IDENTIFIED AS HEALTH OR DEVELOPMENTALLY IMPAIRED - BACKGROUND VARIABLES

### ALPERN-BOLL DEVELOPMENTAL PROFILE

| | | Physical Age | Self-Help Age | Social Age | Academic Age | Communication Age |
|---|---|---|---|---|---|---|
| Variables in the Discriminant Function[1/] | | Multiple Handicaps (.80)<br>Father's ed. (-.413)<br>Mother's occ. (.347)<br>Father's occ. (-.657)<br>Home Environ. (.433) | Severity (.817)<br>Age (.692)<br>Multiple Handicaps (-.469)<br>Father's Educ. (.506) | Siblings (-.419)<br>White (-.378)<br>Mother's ed. (-.449)<br>Father's ed. (.506) | Siblings (.773)<br>Previous Program Experience (-.320)<br>Income (.479) | Severity (-.599)<br>White (.815)<br>Black (.464)<br>Male (-.653)<br>Mother's Educ. (-.341<br>Father's Educ. (.667) |
| Wilk's Lambda | | .783 | .780 | .726 | .833 | .786 |
| $\chi^2$ | | 13.32**<br>(df=5) | 13.65***<br>(df=4) | 15.0***<br>(df=4) | 10.85<br>(df=3) | 12.67**<br>(df=6) |
| Canonical $R^2$ | | .217 | .219 | .273 | .166 | .232 |
| Group Centroids | Group 1 Gainers | .538 (n=25) | .762 (n=16) | -.884 (n=13) | .640 (n=18) | .725 (n=16) |
| | Group 2 No Gainers | .395 (n=34) | -.283(n=43) | .302 (n=38 | -.256 (n=45) | -.313(n=37) |
| | | Predicted | Predicted | Predicted | Predicted | Predicted |
| | | 1 2 | 1 2 | 1 2 | 1 2 | 1 2 |
| Actual | 1 | 15 10 | 6 10 | 5 8 | 5 13 | 7 9 |
| | 2 | 8 26 | 4 39 | 2 36 | 4 41 | 4 33 |

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[1/] Standardized discriminant coefficients in parentheses

* = P < .1
** = P < .05
*** = P < .01

See pages 9.10-9.11 for a discussion of the interpretation of table entries.

TABLE 9.4

### WITHIN GROUPS DISCRIMINANT ANALYSIS FOR HEAD START CHILDREN IDENTIFIED AS MENTALLY RETARDED - BACKGROUND VARIABLES

### ALPERN-BOLL DEVELOPMENTAL PROFILE

| | | Physical Age | Self-Help Age | Social Age | Academic Age | Communication Age |
|---|---|---|---|---|---|---|
| Variables in the Discriminant Function[1] | | Age (-.577<br>Multiple Handicaps (-.711)<br>Father's Educ. (.407) | Age (-.692<br>Black (.395)<br>Male (.273)<br>Mother's Occ. (.592)<br>Father's Occ. (.297)<br>Income (.931)<br>Home Envir. (.459) | Age (.438)<br>Multiple Handicaps(-.562)<br>Black (.307)<br>Mother's Educ. (.524)<br>Income (.939) | Multiple Handicaps (.411)<br>Previous Program Experience(-.652) | Father's Ed. (.534)<br>Income (.676) |
| Wilk's Lambda | | .812 | .604 | .567 | .818 | .88 |
| $x^2$ | | 7.30* (df=3) | 17.9** (df=7) | 18.4*** (df=5) | 7.70* (df=3) | 4.30 (df=2) |
| Canonical $R^2$ | | .187 | .395 | .432 | .181 | .112 |
| Group Centroids | Group 1 Gainers | .541(n=15) | .702(n=18) | -.936 (n=12) | -.463(n=19) | -.384(n=17) |
| | Group 2 No Gainers | -.338(n=24) | -.549(n=25) | .449(n=25) | .382(n=23) | .284(n=23) |
| | Predicted | 1 2 | 1 2 | 1 2 | 1 2 | 1 2 |
| | Actual 1 | 8 7 | 12 6 | 9 3 | 11 8 | 12 5 |
| | Actual 2 | 5 19 | 2 21 | 2 23 | 6 17 | 5 18 |

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[1] Standardized discriminant coefficients in parentheses

* = p < .1
** = p < .05
*** = p < .01

See pages 9.10-9.11 for a discussion of the interpretation of table entries.

## TABLE 9.5

### WITHIN GROUPS DISCRIMINANT ANALYSIS FOR NON-HEAD START CHILDREN IDENTIFIED AS PHYSICALLY HANDICAPPED - BACKGROUND VARIABLES

### ALPERN-BOLL DEVELOPMENTAL PROFILE

| | Physical Age | Self-Help Age | Social Age | Academic Age | Communication Age |
|---|---|---|---|---|---|
| Variables in the Discriminant Function[1/] | Chronological Age (-.521)<br>Siblings (-.331)<br>Multiple Handicapped(-.417)<br>White (.415)<br>Prior Program Experience(.373)<br>Mother's Occup. (-.252)<br>Father's Occup. (.321) | Severity (-.002)<br>Multiple Handicapped (.746) | White (.383)<br>Black (.795)<br>Male (.595)<br>Mother's Occup. (-.396)<br>Income (.754) | Silblings (.496)<br>Prior Program Experience(.373)<br>Income (.601) | Severity (.584)<br>Multiple Handicapped(-.348)<br>White (-.338)<br>Prior Program Experience (-.564)<br>Mother's Education (-.441)<br>Mother's Occupation (.456) |
| Wilk's Lambda | .587 | .909 | .720 | .852 | .456 |
| $x^2$ | 26.877***<br>(df=7) | 4.681*<br>(df=2) | 14.650**<br>(df=5) | 7.943**<br>(df=3) | 27.043***<br>(df=7) |
| Canonical Corr.[2] | .412 | .091 | .280 | .148 | .51 |
| Group Centroids Group 1 Gainers | 1.219(n=12) | -.518(n=13 | .872(n=13) | .669(n=13) | -1.076)n=13) |
| Group 2 No Gainers | -.332(n=44) | -.173(n=39 | -.315(n=36) | -.217(n=40 | .466(n=30) |

| | Predicted | | Predicted | | Predicted | | Predicted | | Predicted | |
|---|---|---|---|---|---|---|---|---|---|---|
| Actual 1 | 8 | 4 | 2 | 11 | 8 | 5 | 3 | 10 | 9 | 4 |
| Actual 2 | 3 | 41 | 1 | 38 | 4 | 32 | 0 | 40 | 1 | 29 |

---

[1/] Standardized discriminant coefficients in parentheses

* = p < .1
** = p < .05
*** = p < .01

[2] See pages 9.10-9.11 for a discussion of the interpretation of table entries.

## TABLE 9.6

## WITHIN GROUPS DISCRIMINANT ANALYSIS FOR NON-HEAD START CHILDREN IDENTIFIED AS SPEECH IMPAIRED - BACKGROUND VARIABLES

### ALPERN-BOLL DEVELOPMENTAL PROFILE

| | | Physical Age | Self-Help Age | Social Age | Academic Age | Communication Age |
|---|---|---|---|---|---|---|
| Variables in the Discriminant Function[1] | | Severity (.472)<br>Siblings (.382)<br>White (-.407) | Father's Education (.442)<br>Father's Occupation (-.788)<br>Income (.730) | Severity (-.375)<br>Siblings (.581)<br>Mother's Education (-.444)<br>Home Environ. (-.514) | Chronological Age (-.522)<br>Siblings (-.335)<br>White (.347)<br>Prior Program Experience (-.479)<br>Home Environ. (.595) | Severity (-.360)<br>Siblings (.573)<br>Male (-.244)<br>Mother's Education(-.442)<br>Father's Occupation(-.285) |
| Wilk's Lambda | | .780 | .790 | .728 | .783 | .634 |
| $\chi^2$ | | 10.423**<br>(df=4) | 10.243**<br>(df=3) | 11.924**<br>(df=5) | 10.870*<br>(df=5) | 17.549***<br>(df=5) |
| Canonical $R^2$ | | .219 | .207 | .304 | .217 | .366 |
| Group Centroids | Group 1 Gainers | .739(n=13) | .872(n=10) | .729(n=14) | -.809(n=12) | 1.356(n=7) |
| | Group 2 no Gainers | -.291(n=33) | -.236(n=37) | -.365(n=28) | .262(n=37) | -.264(n=36) |

| | Predicted | | Predicted | | Predicted | | Predicted | | Predicted | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 |
| Actual 1 | 5 | 8 | 3 | 7 | 7 | 7 | 5 | 7 | 3 | 4 |
| Actual 2 | 3 | 30 | 2 | 35 | 4 | 24 | 2 | 35 | 2 | 34 |

[1] Standardized discriminant coefficients in parentheses

* = p < .1
** = p < .05
*** = p < .01

See pages 9.10-9.11 for a discussion of the interpretation of table entries.

# TABLE 9.7

## WITHIN GROUPS DISCRIMINANT ANALYSIS FOR NON-HEAD START CHILDREN IDENTIFIED AS HEALTH OR DEVELOPMENTALLY IMPAIRED - BACKGROUND VARIABLES

### ALPERN-BOLL DEVELOPMENTAL PROFILE

| | | Physical Age | Self-Help Age | Social Age | Academic Age | Communication Age |
|---|---|---|---|---|---|---|
| Variables in the Discriminant Function[1/] | | Chronological Age (-.699)<br>Male (.531)<br>Mother's Occupation (.268)<br>Home Environ. (-.557) | Chronological Age (-.337)<br>Siblings (-.482)<br>Multiple Handicapped (-.409)<br>Prior Program Experience (-.512)<br>Income (.569) | Severity (.572)<br>Male (-.491)<br>Income (.93) | Sibling (.776)<br>Mother's Education (.585)<br>Father's Education (-.525)<br>Mother's Occupation (-.463) | Chronological Age (.442)<br>Prior Program Experience (.412)<br>Mother's Occupation (-.428)<br>Income (-.782)<br>Home Environ. (.247) |
| Wilk's Lambda | | .541 | .669 | .713 | .567 | .491 |
| $x^2$ | | 15.378***<br>(df=4) | 9.838*<br>(df=5) | 7.285*<br>(df=3) | 13.635***<br>(df=4) | 14.929**<br>(df=6) |
| Canonical $R^2$ | | .459 | .330 | .287 | .432 | .508 |
| Group Centroids | Group 1 Gainers | 1.181(n=7) | .916(n=8) | .935(n=6) | -1.238(n=6) | -1.049(n=8) |
| | Group 2 No Gainers | -.376(n=22) | -.349(n=21) | -.295(n=19) | .338(n=22) | .466(n=18) |

| | Physical Age Predicted 1 | Physical Age Predicted 2 | Self-Help Age Predicted 1 | Self-Help Age Predicted 2 | Social Age Predicted 1 | Social Age Predicted 2 | Academic Age Predicted 1 | Academic Age Predicted 2 | Communication Age Predicted 1 | Communication Age Predicted 2 |
|---|---|---|---|---|---|---|---|---|---|---|
| Actual 1 | 5 | 2 | 5 | 3 | 4 | 2 | 2 | 4 | 6 | 2 |
| Actual 2 | 1 | 21 | 2 | 19 | 1 | 18 | 1 | 21 | 2 | 16 |

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[1/] Standardized discriminant coefficients in parentheses

* =p < .1
** =p < .05
*** =p < .01

See pages 9.10-9.11 for a discussion of the interpretation of table entries.

## TABLE 9.8

## WITHIN GROUPS DISCRIMINANT ANALYSIS FOR NON-HEAD START CHILDREN IDENTIFIED AS MENTALLY RETARDED - BACKGROUND VARIABLES

### ALPERN-BOLL DEVELOPMENTAL PROFILE

| | | Physical Age | Self-Help Age | Social Age | Academic Age | Communication Age |
|---|---|---|---|---|---|---|
| Variables in the Discriminant Function[1/] | | Severity (-.327)<br>Chronological Age (-.287)<br>Male (.807)<br>Mother's Educ. (-.462)<br>Income (.521) | Severity (-.579)<br>Chronological Age (-.436)<br>Siblings (.335)<br>Male (.310)<br>Prior Program Experience (-.321)<br>Home Environ. (-.396) | Siblings (.588)<br>White (.814) | Siblings (-.545)<br>Black (-542)<br>Mother's Education (.495) | Chronological Age (.909)<br>Multiple Handicapped (.431) |
| Wilk's Lambda | | .828 | .888 | .95 | .949 | .936 |
| $x^2$ | | 19.672*** (df=5) | 12.549* (df=6) | 4.014 (df=2) | 5.641 (df=3) | 6.787** (df=2) |
| Canonical $R^2$ | | .171 | .111 | .040 | .050 | .064 |
| Group Centroids | Group 1 Gainers | .844(n=21) | .601(n=26) | .329(n=27) | -.441(n=23) | -.556(n=18) |
| | Group 2 No Gainers | -.201(n=88) | -.184(n=85) | -.122(n=[illegible]) | .114(n=89) | .114(n=88) |

| | Predicted 1 | Predicted 2 | Predicted 1 | Predicted 2 | Predicted 1 | Predicted 2 | Predicted 1 | Predicted 2 | Predicted 1 | Predicted 2 |
|---|---|---|---|---|---|---|---|---|---|---|
| Actual 1 | 5 | 16 | 4 | 22 | 1 | 26 | 2 | 21 | 0 | 18 |
| Actual 2 | 3 | 85 | 4 | 81 | 2 | 71 | 0 | 89 | 0 | 88 |

[1/] Standardized discriminant coefficients in parentheses

* = p < .1
** = p < .05
*** = p < .01

See pages 9.10-9.11 for a discussion of the interpretation of table entries.

Again, though, some general observations can be attempted. Perhaps the most notable trend in the non-Head Start analyses is that severity of handicap and chronological age predominate, in terms of frequency of occurrence, among the variables identified in the non-Head Start analyses. As noted, this was not the case among Head Start enrollees. Also, father-related variables are identified far less frequently in the non-Head Start analyses than was the case among Head Start programs. In brief, it would appear that the background variables that discriminate between "gainers" and "no gainers" in the non-Head Start context more nearly reflect patterns that were a priori believed to be associated with differential program outcomes.

In general, though, the data in Tables 9.1 through 9.8 seem to indicate that a child's family and/or personal characteristics are poor for purposes of identifying those children most likely to gain developmentally. Such an interpretation, burdened as it is with previously-discussed methodological cautions, may imply that most handicapped children who come into a program of services, particularly Head Start, can be expected to be responsive to appropriate remediation/intervention efforts irrespective of their idiosyncratic and socio-cultural backgrounds.

## *ALPERN-BOLL DEVELOPMENTAL PROFILE - PROGRAM CHARACTERISTICS*

Tables 9.9 through 9.16 present the results of within-group discriminant analyses for children enrolled in Head Start and non-Head Start programs with respect to program variables. The program variables considered in these analyses included:

- class size
- class handicap/non-handicap ratio
- percent of time a child is in a mainstream setting (as a proportion of the program day)
- curriculum orientation (a dummy variable; 1 = criterion-referenced, 0 = other)
- teacher's education
- teacher's salary
- teacher's specialty (a dummy variable; 1 = special education, 0 = other)
- teacher's experience with the handicapped

- per pupil expenditures
- length of program service to the handicapped
- parent involvement in program activities
- number of volunteers in the classroom

As in the case of background variable analyses, program discriminant functions were not developed for the two aggregated handicap groups--the "other" category and the learning disabled/emotionally disturbed group. Small sample sizes in these two groups precluded analyses that would have generated meaningful results.

Again, the results of the analyses presented in Tables 9.9 through 9.16 reveal a number of statistically significant discriminant functions, but only in 7 of 40 functions does Wilks' Lambda approach .8--two times for the Head Start sample and five times for the non-Head Start sample. In brief, the variables chosen in these analyses to represent key determinants of the treatment process are inadequate. Multicollinearity and sample group sizes further complicate the interpretation of analytical results.

Despite the weakness of these within-group analyses, however, the available data exhibit several noteworthy patterns. With respect to Head Start, discriminant coefficients associated with teacher experience consistently have the opposite sign of coefficients associated with teacher salary. Moreover, the sign of the coefficient for teacher experience is almost always consistent with the sign of the "gainer" group centroid. This should not be interpreted to mean higher paid (and perhaps better trained) Head Start teachers are less effective than those receiving lower salaries. It does suggest, however, that staff experience, regardless of pay grade or preparation, is important in realizing developmental growth in handicapped children beyond that expected through maturation.1/

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1/ Note, though, that in Table 9.12, (the mentally retarded) the teacher specialization variable (teachers with special education degrees) is a significant variable in three discriminant functions (physical age, social age, and self-help age) and the sign of the coefficients is consistent with the sign of the "gainer" group centroid.

Again, with respect to Head Start, smaller class size seems to favor the realization of program benefits for the mentally retarded (Table 9.12). Finally, the proportion of time spent in a mainstream context appears to be associated with developmental gains for the physically handicapped and mentally retarded Head Start enrollees (Tables 9.9 and 9.12) but it is negatively associated (or unimportant) with respect to developmental gains for the speech impaired (Table 9.10).

These latter two patterns invite policy-related interpretation. However the shortcomings of the within-groups discriminant functions would caution against using analytical results to formulate policy recommendations. Rather, these results may best be considered potential hypotheses for additional, more narrowly focused, research.

With respect to non-Head Start enrollees, the procedures established for defining "gainers" resulted in small numbers of "gainers" for each of the handicapping conditions except the mentally retarded. Therefore, with the exception of analyses specific to the mentally retarded children, discriminant coefficients for program variables must be considered extremely unstable and are not considered in the context of this report. Analyses involving non-Head Start enrolless who are mentally retarded (Table 9.16) reveal few patterns of note. Three of the five subscales exhibit statistically significant discriminant functions, but the discriminatory power in each is marginal. The only variable common to these functions is teacher experience and the relationship of this variable to "gainers" and "non-gainers" is similar to that noted among Head Start enrollees--the more experienced teachers are associated with "gainers." However, it is not clear in the non-Head Start case that this relationship is independent of teachers' level of education or area of specialization. In summary, the results of the Alpern-Boll within groups analysis afford little insight into the processes or structures which enhance child development beyond that

## TABLE 9.9

## WITHIN GROUP DISCRIMINANT ANALYSIS FOR HEAD START CHILDREN IDENTIFIED AS PHYSICALLY HANDICAPPED - PROGRAM VARIABLES

### ALPERN-BOLL DEVELOPMENTAL PROFILE

| | | Physical Age | Self-Help Age | Social Age | Academic Age | Communication Age |
|---|---|---|---|---|---|---|
| Variables in the Discriminant Function[1/] | | Teacher Experience (-.410)<br>Teacher Salary (.912)<br>Class Handicap Ratio (-.571)<br>% of Time Mainstreamed(-.42) | Teacher Experience (-.347)<br>Teacher Education (-.622)<br>Curriculm (-.528)<br>Involvement of Parents (-.301)<br>Number of Class Volunteers (.543) | Curriculum (.761)<br>Program Experience (.65) | Teacher Experience (.655)<br>Teacher Salary (-.336)<br>Class Size (-.359)<br>% of Time Mainstreamed (.328)<br>Program Experience (-.586)<br>Pupil Expenditure (-.211) | Teacher Salary (-.444)<br>Class Handicap Ratio (.832)<br>Involvement of Parents (.312)<br>Pupil Expenditure (-1.259)<br>Number of Volunteers (.855) |
| Wilk's Lambda | | .886 | .75 | .93 | .786 | .76 |
| $x^2$ | | 7.147<br>(df=4) | 17.004***<br>(df=6) | 3.945<br>(df=2) | 15.670**<br>(df=6) | 13.61**<br>(df=5) |
| Canonical $R^2$ | | .114 | .250 | .070 | .214 | .240 |
| Group Centroids | Group 1 Gainers | -.551(n=17) | -.620(n=25) | .404(n=17) | .753(n=19) | .663(n=20) |
| | Group 2 No Gainers | .204(n=46) | .397(n=39) | -.172(n=40) | -.280(n=51) | -.373(n=34) |

| | | Predicted | | Predicted | | Predicted | | Predicted | | Predicted | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 |
| Actual | 1 | 0 | 17 | 17 | 8 | 0 | 17 | 7 | 12 | 10 | 10 |
| | 2 | 1 | 45 | 7 | 32 | 0 | 40 | 5 | 46 | 4 | 30 |

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[1/] Standardized discriminant coefficients in parentheses

* = $p \leq .1$
** = $p \leq .05$
*** = $p \leq .01$

See pages 9.10-9.11 for a discussion of the interpretation of table entries.

## TABLE 9.10

## WITHIN GROUPS DISCRIMINANT ANALYSIS FOR HEAD START CHILDREN IDENTIFIED AS SPEECH IMPAIRED - PROGRAM VARIABLES

### ALPERN-BOLL DEVELOPMENTAL PROFILE

| | | Physical Age | Self-Help Age | Social Age | Academic Age | Communication Age |
|---|---|---|---|---|---|---|
| Variables in the Discriminant Function[1/] | | Teacher Experience (-.468)<br>Education Specialization (-.673)<br>% of Time Mainstreamed (-.577)<br>Number of Volunteers(-.362) | Education Specialization (-.482)<br>% of Time Mainstreamed (-.751)<br>Curriculm (.425) | Teacher Experience (.707)<br>Involvement of Parents (-.501)<br>Number of Volunteers (.352) | Teacher's Education (-.886)<br>Education Specialization (1.195) | Teacher's Education (-.968)<br>Class Size (-.371)<br>Class Handicap Ratio (-.508)<br>% of Time Mainstreamed (-.466)<br>Curriculum (.53) |
| Wilk's Lambda | | .848 | .895 | .891 | .955 | .885 |
| $x^2$ | | 15.364*** (df=4) | 9.350** (df=3) | 10.084** (df=3) | 4.613* (df=2) | 10.109* (df=5) |
| Canonical $R^2$ | | .152 | .104 | .108 | .045 | .115 |
| Group Centroids | Group 1 Gainers | .659 | .541(n=23) | -.468(n=30) | -.307(n=33) | -.465(n=30) |
| | Group 2 No Gainers | -.229(n=72) | -.191(n=65) | .230(n=61) | .147(n=69) | .245(n=57) |
| | | Predicted | Predicted | Predicted | Predicted | Predicted |
| | | 1 2 | 1 2 | 1 2 | 1 2 | 1 2 |
| Actual | 1 | 7 18 | 3 20 | 9 21 | 4 29 | 7 23 |
| | 2 | 2 70 | 1 64 | 7 54 | 1 68 | 6 51 |

[1/] Standardized discriminant coefficients in parentheses

* = $p < .1$
** = $p < .05$
*** = $p < .01$

See pages 9.10-9.11 for a discussion of the interpretation of table entries.

## TABLE 9.11

## WITHIN GROUPS DISCRIMINANT ANALYSIS FOR HEAD START CHILDREN IDENTIFIED AS HEALTH OR DEVELOPMENTALLY IMPAIRED - PROGRAM VARIABLES

### ALPERN-BOLL DEVELOPMENTAL PROFILE

| | | Physical Age | Self-Help Age | Social Age | Academic Age | Communication Age |
|---|---|---|---|---|---|---|
| Variables in the Discriminant Function[1/] | | Teacher Experience (-.788)<br>Program Experience (-.539)<br>Number of Volunteers (-.367) | Teacher Experience (-.677)<br>% of Time Mainstreamed(-.399<br>Curriculum (-.435)<br>Program Experience (-.597) | Teacher Salary (.875)<br>Class Handicap Ratio (-.633)<br>Pupil Expenditure (.593) | Teacher Experience (.446)<br>Teacher Salary (-.467)<br>Curriculum (.728)<br>Program Pxperience (-.469)<br>Pupil Expenditures (-.56) | Teacher Education (.383)<br>Teacher Salary (.562)<br>Class Size (-.533)<br>Education Specialty (-.478)<br>Curriculm (-.65)<br>Involvement of Parents (-.382)<br>% of Volunteers (-.442) |
| Wilk's Lambda | | .865 | .862 | .856 | .803 | .746 |
| $x^2$ | | 8.049*<br>(df=3) | 8.195<br>(df=4) | 7.369<br>(df=3) | 12.703*<br>(df=6) | 13.942<br>(df=7) |
| Canonical $R^2$ | | .134 | .138 | .143 | .197 | .254 |
| Group Centroids | Group 1 Gainers | -.425(n=25) | -.605(n=16) | -.642(n=13) | .696(n=18) | -.76(n=6 |
| | Group 2no Gainers | 312(n=34) | .225(n=43) | .22(n=38) | -.278(n=45) | .329(n=37) |
| | | Predicted | Predicted | Predicted | Predicted | Predicted |
| | | 1 2 | 1 2 | 1 2 | 1 2 | 1 2 |
| Actual | 1 | 16 9 | 5 11 | 1 12 | 8 10 | 10 6 |
| | 2 | 11 23 | 5 38 | 1 37 | 2 43 | 2 35 |

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[1/] Standardized discriminant coefficients in parentheses

* = p < .1
** = p < .05
*** = p < .01

See pages 9.10-9.11 for a discussion of the interpretation of table entries.

## TABLE 9.12

## WITHIN GROUPS DISCRIMINANT ANALYSIS FOR HEAD START CHILDREN IDENTIFIED AS MENTALLY RETARDED - PROGRAM VARIABLES

## ALPERN-BOLL DEVELOPMENTAL PROFILE

| | | Physical Age | Self-Help Age | Social Age | Academic Age | Communication Age |
|---|---|---|---|---|---|---|
| Variables in the Discriminant Function[1/] | | Teacher Experience (.42)<br>Education Specialization (-.924)<br>% of Time Mainstreamed (-.39)<br>Pupil Expenditure (-.425) | Teacher Experience (.561)<br>Class Size (.557)<br>Class Handicap Ratio (-.602)<br>Education Specialization (.355) | Class Size (-.905)<br>Education Specialization (-.437)<br>Program Experience (.827) | Teacher Salary (.853)<br>Class Size (-.612)<br>Class Handicap Ratio (-1.332)<br>% of Time Mainstreamed (-.414)<br>Number of Volunteers (.568) | Teacher's Education (-.482)<br>Class Size (-.61)<br>Number of Volunteers (-.642) |
| Wilk's Lambda | | .700 | .721 | .777 | .790 | .876 |
| $x^2$ | | 12.475** (df=4) | 12.124** (df=4) | 8.458** (df=3) | 8.838 (df=5) | 4.848 (df=3) |
| Canonical $R^2$ | | .300 | .279 | .222 | .209 | .124 |
| Group Centroids | Group 1 Gainers | -.684(n=15) | .590(n=18) | -.673(n=12) | -.498(n=19) | -.405(n=17) |
| | Group 2 No Gainers | .427(n=24) | -.462(n=23) | .323(n=25) | .411(n=23) | .299(n=23) |

| | Physical Age Predicted 1 | Physical Age Predicted 2 | Self-Help Age Predicted 1 | Self-Help Age Predicted 2 | Social Age Predicted 1 | Social Age Predicted 2 | Academic Age Predicted 1 | Academic Age Predicted 2 | Communication Age Predicted 1 | Communication Age Predicted 2 |
|---|---|---|---|---|---|---|---|---|---|---|
| Actual 1 | 10 | 3 | 12 | 6 | 7 | 5 | 15 | 4 | 6 | 11 |
| Actual 2 | 2 | 22 | 4 | 19 | 2 | 23 | 5 | 18 | 4 | 19 |

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[1/] Standardized discriminant coefficients in parentheses

* = p .1
** = p .05
*** = p .01

See pages 9.10-9.11 for a discussion of the interpretation of table entries.

## TABLE 9.13

## WITHIN GROUPS DISCRIMINANT ANALYSIS FOR NON-HEAD START CHILDREN IDENTIFIED AS PHYSICALLY HANDICAPPED - PROGRAM VARIABLES

### ALPERN-BOLL DEVELOPMENTAL PROFILE

| | | Physical Age | Self-Help Age | Social Age | Academic Age | Communication Age |
|---|---|---|---|---|---|---|
| Variables in the Discriminant Function[1/] | | Teacher Salary (1.136)<br>Education Specialization (-.415)<br>Curriculum (-.478)<br>Pupil Expenditures (.355) | Class Handicap Ratio (-.572)<br>Involvement of Parents (-1.009)<br>Program Experience (-.473) | Teacher Salary (-.869)<br>Class Size (-54)<br>Pupil Expenditure (.474) | Class Handicap Ratio (-.897)<br>% of Time Mainstreamed (-1.142)<br>Program Experience (-.38)<br>Pupil Expenditure (-608)<br>% of Volunteers (-.671) | Education Specialization (-.443)<br>Program Experience (-.798)<br>% of Volunteers (.69) |
| Wilk's Lambda | | .751 | .792 | .882 | .793 | .728 |
| $\chi^2$ | | 14.621**<br>(df=4) | 11.088**<br>(df=3) | 5.579<br>(df=3) | 11.035<br>(df=5) | 12.210**<br>(df=3) |
| Canonical $R^2$ | | .249 | .207 | .117 | .207 | .271 |
| Group Centroids | Group 1 Gainers | .936(n=12) | -.772(n=13) | -.557(n=13) | .781(n=13) | -.769(n=13) |
| | Group 2 No Gainers | -.261(n=43) | .264(n=38) | .207(n=35) | -.260(n=39) | .345(n=29) |

| | Predicted | | Predicted | | Predicted | | Predicted | | Predicted | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 |
| Actual 1 | 2 | 10 | 4 | 9 | 2 | 11 | 6 | 7 | 7 | 6 |
| Actual 2 | 0 | 43 | 1 | 37 | 1 | 34 | 3 | 36 | 3 | 26 |

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[1/] Standardized discriminant coefficients in parentheses

* = p < .1
** = p < .05
*** = p < .01

See pages 9.10-9.11 for a discussion of the interpretation of table entries.

### TABLE 9.14

### WITHIN GROUPS DISCRIMINANT ANALYSIS FOR NON-HEAD START CHILDREN IDENTIFIED AS SPEECH IMPAIRED - PROGRAM VARIABLES

### ALPERN-BOLL DEVELOPMENTAL PROFILE

| | | Physical Age | Self-Help Age | Social Age | Academic Age | Communication Age |
|---|---|---|---|---|---|---|
| Variables in the Discriminant Function[1/] | | Teacher Experience (.517)<br>Teacher Education (-1.263)<br>Class Handicap Ratio (.793)<br>Curriculum (.947) | Teacher Experience (.504)<br>Teacher Education (.743)<br>Teacher Salary (-1.087)<br>Education Specialization (.336)<br>Number of Volunteers (.694) | Class Handicap Ratio (1.138)<br>% of Time Mainstreamed (1.973) | Teacher Salary (-.793)<br>Program Experience (-.563)<br>Number of Volunteers (.430) | Teacher Experience (.713)<br>Teacher Salary (1.004)<br>Education Specialization (-.390)<br>Program Experience (.312) |
| Wilk's Lambda | | .846 | .656 | .856 | .79 | .669 |
| $x^2$ | | 7.036 (df=4) | 17.904*** (df=5) | 6.075** (df=2) | 10.729** (df=3) | 15.697*** (df=4) |
| Canonical $R^2$ | | .154 | .343 | .144 | .209 | .331 |
| Group Centroids | Group 1 Gainers | -.619(n=13) | 1.116(n=10) | .531(n=14) | .797(n=12) | -1.290(n=7) |
| | Group 2 No Gainers | .244(n=33) | -.302(n=37) | -.265(n=28) | -.258(n=37) | .251(n=36) |

| | Physical Age Predicted 1 | Physical Age Predicted 2 | Self-Help Age Predicted 1 | Self-Help Age Predicted 2 | Social Age Predicted 1 | Social Age Predicted 2 | Academic Age Predicted 1 | Academic Age Predicted 2 | Communication Age Predicted 1 | Communication Age Predicted 2 |
|---|---|---|---|---|---|---|---|---|---|---|
| Actual 1 | 5 | 8 | 4 | 6 | 5 | 9 | 5 | 7 | 5 | 2 |
| Actual 2 | 4 | 29 | 1 | 36 | 2 | 26 | 2 | 35 | 2 | 34 |

[1/] Standardized discriminant coefficients in parentheses

* = p .1
** = p 05
*** = p .01

See pages 9.10-9.11 for a discussion of the interpretation of table entries.

## TABLE 9.15

### WITHIN GROUPS DISCRIMINANT ANALYSIS FOR NON-HEAD START CHILDREN IDENTIFIED AS HEALTH OR DEVELOPMENTALLY IMPAIRED - PROGRAM VARIABLES

### ALPERN-BOLL DEVELOPMENTAL PROFILE

| | | Physical Age | Self-Help Age | Social Age | Academic Age | Communication Age |
|---|---|---|---|---|---|---|
| Variables in the Discriminant Function[1/] | | Class Handicap Ratio (.681)<br>Curriculum (.556) | Teacher Salary (.779)<br>Class Handicap Ratio (-.484)<br>Education Specialization (.33)<br>Curriculum (-.424)<br>Pupil Expenditure (-.485) | Teacher Salary (-.935)<br>Pupil Expenditure (.7) | Teacher Experience (-.412)<br>Class Handicap Ratio (-.490)<br>% of Time Mainstreamed (-.477)<br>Curriculum (-.393)<br>Involvement of Parents (-.524)<br>Program Experience (.508) | Education Specialization (.521)<br>Curriculum (-.616)<br>Involvement of Parents (.499)<br>Program Experience (-.369)<br>Pupil Expenditure (-.395) |
| Wilk's Lambda | | .843 | .657 | .785 | .497 | .684 |
| $x^2$ | | 4.283 (df=2) | 9.864* (df=5) | 5.072* (df=2) | 15.378** (df=6) | 7.794 (df=5) |
| Canonical $R^2$ | | .157 | .342 | .214 | .502 | .315 |
| Group Centroids | Group 1 Gainers | -.746(n=6) | .996(n=7) | -.785(n=6) | 1.302(n=6) | .803(n=8) |
| | Group 2 No Ga[illegible] | .203(n=22) | -.339(n=21) | .262(n=18) | -.372(n=21) | -.378(n=17) |

| | Predicted 1 | Predicted 2 | Predicted 1 | Predicted 2 | Predicted 1 | Predicted 2 | Predicted 1 | Predicted 2 | Predicted 1 | Predicted 2 |
|---|---|---|---|---|---|---|---|---|---|---|
| Actual 1 | 1 | 5 | 3 | 4 | 2 | 4 | 4 | 2 | 5 | 3 |
| Actual 2 | 0 | 22 | 1 | 20 | 1 | 17 | 1 | 20 | 2 | 15 |

[1/] Standardized discriminant coefficients in parentheses

* = $p < .1$
** = $p < .05$
*** = $p < .01$

See pages 9.10-9.11 for a discussion of the interpretation of table entries.

## TABLE 9.16

## WITHIN GROUPS DISCRIMINANT ANALYSIS FOR NON-HEAD START CHILDREN IDENTIFIED AS MENTALLY RETARDED - PROGRAM VARIABLES

### ALPERN-BOLL DEVELOPMENTAL PROFILE

| | | Physical Age | Self-Help Age | Social Age | Academic Age | Communication Age |
|---|---|---|---|---|---|---|
| Variables in the Discriminant Function[1/] | | Class Size (.793)<br>Pupil Expenditure (.733) | Class Handicap Ratio (-.515)<br>% of Time Mainstreamed (-.626)<br>Involvement of Parents (-.570)<br>Number of Volunteers (-.678) | Teacher's Experience (-.283)<br>Class Size ( .404)<br>Education Specialization (-.937)<br>% of Time Mainstreaming (-.509)<br>Program Experience (-.353) | Teacher's Experience(.759)<br>Teacher's Education (.678)<br>Class Size (-.635)<br>Involvement of Parents (.412) | Teacher's Experience (-.61)<br>Teacher's Education (-.799)<br>Education Specialization ( .988)<br>Curriculum (-.327)<br>Involvement of Parents (-.70)<br>Program Experience (.432) |
| Wilk's Lambda | | .962 | .921 | .871 | .910 | .873 |
| $\chi^2$ | | 4.014<br>(df=2) | 8.617*<br>(df=4) | 12.79**<br>(df=5) | 9.865**<br>(df=4) | 13.297**<br>(df=6) |
| Canonical $R^2$ | | .038 | .079 | .128 | .089 | .126 |
| Group Centroids | Group 1 Gainers | -.392(n=21) | -.498(n=26) | -.576(n=27) | .576(n=23) | -.77(n=18) |
| | Group 2 No Gainers | .096(n=86) | .158(n=82) | .222(n=70) | -.154(n=86) | -.163(n=85) |

| | Predicted | | Predicted | | Predicted | | Predicted | | Predicted | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 |
| Actual 1 | 0 | 21 | 4 | 23 | 7 | 20 | 2 | 21 | 1 | 17 |
| Actual 2 | 0 | 86 | 2 | 80 | 5 | 65 | 1 | 85 | 0 | 85 |

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[1/] Standardized discriminant coefficients in parentheses

* = P .1
** = P .05
*** = P .01

See pages 9.10-9.11 for a discussion of the interpretation of table entries.

due to maturation. With some confidence it can be suggested that for both Head Start and non-Head Start children program benefits are not constrained by a child's personal, cultural, and socioeconomic circumstances as long as these factors are addressed by the plan of services offered by the child's program.

What it is about a program, though, that fosters developmental gains remains unresolved. Given the preponderance of teacher-related and class-structure related variables that are identified in the discriminant analyses presented in Tables 9.9 through 9.16, it would appear that it is at the class level that program effects are realized. That is, program effects are grounded in teacher characteristics and class structures. This is perhaps a painfully obvious conclusion. Such a conclusion does, however, more narrowly define the focus of inquiry in future analyses as to the sources of treatment effects. Of particular interest is how teacher and class structure variables affect parent involvement in program activities given the importance, both empirical and theoretical, of total family involvement in efforts to meet the needs of handicapped children.

### *THE CALIFORNIA PRESCHOOL SOCIAL COMPETENCY SCALE - BACKGROUND CHARACTERISTICS*

Investigation into the relationship of child and family background variables to outcomes measured by the California Preschool Social Competency Scale are presented in Tables 9.17 through 9.20. Tables are developed for children identified as physically handicapped, speech impaired, health or developmentally impaired and mentally retarded, respectively. Children are classified as "gainers" (Group 1) and "no gainers" (Group 2). A child was considered a "gainer" if his/her posttest percentile rank was five points higher than his/her pretest percentile rank.

The results of the background variables analyses reveal significant functions for the non-Head Start physically handicapped (Table 9.17); Head Start and non-Head Start children with health or developmental impairments (Table 9.19); and Head Start and non-Head Start children identified as mentally retarded (Table 9.20). The discriminatory capability of two of these functions is relatively good with Wilks' Lambda obtaining a value of less than .55 (Tables 9.17 and 9.19, non-Head Start children).

In terms of the specific variables identified by these analyses, few consistent patterns are observable. It does appear, however, that the more parents interact with their children in the home the more likely children will exhibit gains in classroom social skills. This statement is based on the discriminant coefficients associated with the High/Scope Home Environment Scale.

Severity of handicap mediates against gains in classroom social skills in both Head Start and non-Head Start programs, although this varies by the nature of the handicap under consideration. Sex and ethnicity appear to affect these gains in Head Start but not in non-Head Start gains. With respect to sex, males are associated with gains among the Head Start health and developmentally impaired and no gains among the retarded. Whites show gains and no gains in a similar pattern.

Perhaps the most curious result of these analyses is the relatively consistent negative coefficients associated with parent education and occupation variables. While this finding may simply be an artifact of small sample size, one could interpret the negative coefficients associated with mother-related variables as indicating that working mothers have less time to spend with their children and consequently less time for those interactions and exchanges that, as shown by the High/Scope Home Environment Scale, are significant in predicting "gainers" from "no gainers" in the social skills area.

Taken as a whole, though, the analyses presented in Tables 9.17 through 9.20 indicate that unlike developmental gains, gains in classroom social skills seem to be related to the handicapped child's

## TABLE 9.17

## WITHIN GROUPS DISCRIMINANT ANALYSIS FOR CHILDREN IDENTIFIED AS PHYSICALLY HANDICAPPED - BACKGROUND VARIABLES CALIFORNIA PRESCHOOL SOCIAL COMPETENCY SCALE

| | Head Start | Non-Head Start |
|---|---|---|
| Variables in the Discriminant Function1/ | Severity (.400)<br>White (-.480)<br>Male (.679)<br>Father's Occupation (.759)<br>Income (-.576)<br>Home Environ. (.29) | Severity (-.418)<br>Father's Education (-.730)<br>Father's Occupation (.-243)<br>Income (.452)<br>Home Environ. (.895) |
| Wilk's Lambda | .816 | .547 |
| $x^2$ | 12.440*<br>(df: 6) | 28.631***<br>(df: 5) |
| Canonical $R^2$ | .184 | .452 |
| Group Centroids | | |
| Group 1 Gainers | -.583 (N=23) | .748 (N=23) |
| Group 2 No Gainers | .312 (N=43) | -.593 (N=29) |

Head Start

| | | Predicted 1 | Predicted 2 |
|---|---|---|---|
| Actual | 1 | 10 | 13 |
| | 2 | 4 | 39 |

Non-Head Start

| | | Predicted 1 | Predicted 2 |
|---|---|---|---|
| Actual | 1 | 19 | 4 |
| | 2 | 4 | 25 |

---

1/ Standardized discriminant coefficients in parentheses

* = $p < .1$
** = $p < .05$
*** = $p < .01$

See pages 9.10-9.11 for a discussion of the interpretation of table entries.

## TABLE 9.18

## WITHIN GROUPS DISCRIMINANT ANALYSIS FOR CHILDREN IDENTIFIED AS SPEECH IMPAIRED - BACKGROUND VARIABLES CALIFORNIA PRESCHOOL SOCIAL COMPETENCY SCALE

| | Head Start | Non-Head Start |
|---|---|---|
| Variables in the Discriminant Function[1] | Severity (.384)<br>White (-.699)<br>Father's Education (-.532) | Siblings (.514)<br>White (.38)<br>Male (.350)<br>Previous Program Experience (.359)<br>Mother's Occupation (-.546)<br>Father's Occupation (.578) |
| Wilk's Lambda | .937 | .762 |
| $x^2$ | 7.022*<br>(df: 6) | 12.239*<br>(df: 6) |
| Canonical $R^2$ | .062 | .238 |
| Group Centroids | | |
| Group 1 Gainers | -.232 (N=60) | .545 (N=22) |
| Group 2 No Gainers | .268 (N=52) | -.428 (N=28) |

Head Start:

| | | Predicted 1 | Predicted 2 |
|---|---|---|---|
| Actual | 1 | 43 | 17 |
| | 2 | 26 | 26 |

Non-Head Start:

| | | Predicted 1 | Predicted 2 |
|---|---|---|---|
| Actual | 1 | 13 | 9 |
| | 2 | 4 | 24 |

[1] Standardized discriminant coefficients in parentheses.

* = $p < .1$
** = $p < .05$
*** = $p < .01$

See pages 9.10-9.11 for a discussion of the interpretation of table entries.

## TABLE 9.19

## WITHIN GROUPS DISCRIMINANT ANALYSIS FOR CHILDREN IDENTIFIED AS HEALTH OR DEVELOPMENTALLY IMPAIRED - BACKGROUND VARIABLES CALIFORNIA PRESCHOOL SOCIAL COMPETENCY SCALE

| | Head Start | Non-Head Start |
|---|---|---|
| Variables in the Discriminant Function1/ | Severity (-.465)<br>Chronological Age (.254)<br>White (.351)<br>Male (.305)<br>Previous Program Experience (.510)<br>Father's Education (-.406)<br>Home Environ. (.343) | Siblings (.312)<br>Multiple Handicap (-.350)<br>Mother's Education (-.906)<br>Income (.511) |
| Wilk's Lambda | .676 | .542 |
| $x^2$ | 23.704***<br>(df: 7) | 15.938***<br>(df: 4) |
| Canonical $R^2$ | .323 | .458 |
| Group Centroids | | |
| Group 1 Gainers | .565 (N=33) | .761 (N=13) |
| Group 2 No Gainers | -.565 (N=33) | -.582 (N=17) |

| | | Predicted | |
|---|---|---|---|
| | | 1 | 2 |
| Actual | 1 | 24 | 9 |
| | 2 | 10 | 23 |

| | | Predicted | |
|---|---|---|---|
| | | 1 | 2 |
| Actual | 1 | 9 | 4 |
| | 2 | 3 | 14 |

---

1/Standardized discriminant coefficients in parentheses.

* =P < .1
** =P < .05
*** =P < .01

See pages 9.10-9.11 for a discussion of the interpretation of table entries.

# TABLE 9.20

## WITHIN GROUPS DISCRIMINANT ANALYSIS FOR CHILDREN IDENTIFIED AS MENTALLY RETARDED - BACKGROUND VARIABLES CALIFORNIA PRESCHOOL SOCIAL COMPETENCY SCALE

| | Head Start | Non-Head Start |
|---|---|---|
| Variables in the Discriminant Function[1] | Siblings (-.786)<br>White (-.659)<br>Male (-.306)<br>Mother's Occupation (-.406)<br>Father's Occupation (-.324)<br>Home Envir. (.658) | Severity (-.608)<br>White (.313)<br>Mother's Occupation (-.311)<br>Home Envir.(.465) |
| Wilk's Lambda | .679 | .806 |
| $x^2$ | 15.467**<br>(df: 6) | 22.676***<br>(df: 4) |
| Canonical $R^2$ | .320 | .194 |
| Group Centroids | | |
| Group 1 Gainers | .984 (N=11) | .652 (N=34) |
| Group 2 No Gainers | -.319 (N=34) | -.295 (N=75) |

| | | Predicted | | | | Predicted | |
|---|---|---|---|---|---|---|---|
| | | 1 | 2 | | | 1 | 2 |
| Actual | 1 | 4 | 7 | Actual | 1 | 13 | 21 |
| | 2 | 3 | 31 | | 2 | 9 | 66 |

---

[1] Standardized discriminant coefficients in parentheses.

* = $p < .1$
** = $p < .05$
*** = $p < .01$

See pages 9.10-9.11 for a discussion of the interpretation of table entries.

personal, cultural, and socioeconomic circumstances. To the extent these circumstances are not amenable to a program of services (e.g., severity of handicap) then the ability of programs to realize increased classroom social skills is limited. However, these analyses indicate that the parental involvement activities are perhaps even more important in realizing social skills gains than in realizing gains in normal developmental milestones.

## *THE CALIFORNIA SOCIAL COMPETENCY SCALE - PROGRAM VARIABLES*

Discriminant analyses involving the California Preschool Social Competency Scale and program variables are presented in Tables 9.21 through 9.24 for the physically handicapped, speech impaired, health or developmentally impaired, and mentally retarded, respectively. Statistically significant discrimination is evident for non-Head Start speech impaired children (Table 9.22), Head Start health or developmentally impaired children (Table 9.23), and mentally retarded children in both Head Start and non-Head Start programs Table 9.24).

Reinforcing tentative conclusions drawn from background variable analysis, active parent involvement is associated with social skills "gainers," particularly in Head Start programs. Outside of this particular variable, however, there seems to be no stable pattern to the program variables identified by the various discriminant functions.

To repeat the point made for Alpern-Boll program variable analyses, the program processes or structures associated with identifiable program benefits remain unclear. The principal variables again seem to be imbedded in classroom structure, teacher variables and the degree to which these variables may enhance parent involvement in program activities. Further analysis will be required, though, to more fully delineate the rather complex interactions between program and child that result in measurable program benefits in the classroom social skills area.

## TABLE 9.21

## WITHIN GROUPS DISCRIMINANT ANALYSIS FOR CHILDREN IDENTIFIED AS PHYSICALLY HANDICAPPED - PROGRAM VARIABLES CALIFORNIA PRESCHOOL SOCIAL COMPETENCY SCALE

| | Head Start | Non-Head Start |
|---|---|---|
| Variables in the Discriminant Function[1] | Teacher's Experience (.817)<br>Number of Volunteers (-.617) | Teacher's Education (-.718)<br>Class Handicap Ratio (.481)<br>Program Experience (-.545)<br>Number of Volunteers (.718) |
| Wilk's Lambda | .939 | .853 |
| $x^2$ | 3.960<br>(df: 2) | 7.470<br>(df: 4) |
| Canonical $R^2$ | .061 | .146 |
| Group Centroids | | |
| Group 1 Gainers | .335 (N=23) | -.419 (N=23) |
| Group 2 No Gainers | -.179 (N=43) | .344 (N=28) |

| | | Predicted | |
|---|---|---|---|
| | | 1 | 2 |
| Actual | 1 | 7 | 16 |
| | 2 | 4 | 39 |

| | | Predicted | |
|---|---|---|---|
| | | 1 | 2 |
| Actual | 1 | 13 | 10 |
| | 2 | 5 | 23 |

[1] Standardized discriminant coefficients in parentheses

* =P < .1<br>
** =P < .05<br>
*** =P < .01

See pages 9.10-9.11 for a discussion of the interpretation of table entries.

TABLE 9.22

## WITHIN GROUPS DISCRIMINANT ANALYSIS FOR CHILDREN IDENTIFIED AS SPEECH IMPAIRED - PROGRAM VARIABLES CALIFORNIA PRESCHOOL SOCIAL COMPETENCY SCALE

| | Head Start | Non-Head Start |
|---|---|---|
| Variables in the Discriminant Function[1] | Parent Involvement (-.529)<br>Program Experience (.825) | Teacher Experience (.288)<br>Teacher Salary (.648)<br>Class Size (-.547)<br>Class Handicap Ratio (-.921)<br>Teacher's Specialization (-.308)<br>% of Time Mainstreamed (-.60)<br>Curriculum (-.305)<br>Parent Involvement (-.516)<br>Program Experience (-.517)<br>Number of Volunteers (-.212) |
| Wilk's Lambda | .951 | .490 |
| $x^2$ | 5.386* (df: 2) | 30.643*** (df: 10) |
| Canonical $R^2$ | .048 | .509 |
| Group Centroids | | |
| Group 1 Gainers | .206 (N=59) | .797 (N=22) |
| Group 2 No Gainers | -.234 (N=52) | -.626 (N=28) |

Head Start:

| Actual | Predicted 1 | Predicted 2 |
|---|---|---|
| 1 | 41 | 18 |
| 2 | 27 | 25 |

Non-Head Start:

| Actual | Predicted 1 | Predicted 2 |
|---|---|---|
| 1 | 19 | 3 |
| 2 | 3 | 25 |

---

[1] Standardized discriminant coefficients in parentheses

* = p < .1
** = p < .05
*** = p < .01

See pages 9.10-9.11 for a discussion of the interpretation of table entries.

## TABLE 9.23

## WITHIN GROUPS DISCRIMINANT ANALYSIS FOR CHILDREN IDENTIFIED AS HEALTH OR DEVELOPMENTALLY IMPAIRED - PROGRAM VARIABLES CALIFORNIA PRESCHOOL SOCIAL COMPETENCY SCALE

| | Head Start | Non-Head Start |
|---|---|---|
| Variables in the Discriminant Function1/ | Teacher's Education (.442)<br>Parent Involvement (-.856)<br>Pupil Expenditure (.478) | Teacher's Experience (.537)<br>Teacher's Salary (-.466)<br>Class Handicap Ratio (-.589)<br>Curriculum (.67)<br>Parent Involvement (.723) |
| Wilk's Lambda | .844 | .666 |
| $x^2$ | 10.589** (df: 3) | 9.953* (df: 5) |
| Canonical $R^2$ | .156 | .334 |
| Group Centroids | | |
| Group 1 Gainers | -.392 (N=33) | .676 (N=12) |
| Group 2 No Gainers | .392 (N=33) | -.477 (N=17) |

| | | Predicted 1 | Predicted 2 |
|---|---|---|---|
| Actual | 1 | 19 | 14 |
| | 2 | 11 | 22 |

| | | Predicted 1 | Predicted 2 |
|---|---|---|---|
| Actual | 1 | 7 | 5 |
| | 2 | 2 | 15 |

---

1/Standardized discriminant coefficients in parentheses

* = P < .1
** = P < .05
*** = P < .01

See pages 9.10-9.11 for a discussion of the interpretation of table entries.

## TABLE 9.24

## WITHIN GROUPS DISCRIMINANT ANALYSIS FOR CHILDREN IDENTIFIED AS MENTALLY RETARDED - PROGRAM VARIABLES CALIFORNIA PRESCHOOL SOCIAL COMPETENCY SCALE

| | Head Start | Non-Head Start |
|---|---|---|
| Variables in the Discriminant Function1/ | Teacher's Experience (-.277)<br>Teacher's Salary (.668)<br>Class Size (-.380)<br>Class Handicap Ratio (-.917)<br>Teacher's Specialization (.438)<br>Curriculum (.407)<br>Parent Involvement (-.801)<br>Program Experience (-.486)<br>Number of Volunteers (-.620) | Class Handicap Ratio (-.779)<br>Teacher's Specialization (.381)<br>Curriculum (.274)<br>Parent Involvement (-.648)<br>Program Experience (-.368) |
| Wilk's Lambda | .547 | .786 |
| $x^2$ | 23.234***<br>(df: 9) | 24.446**<br>(df: 5) |
| Canonical $R^2$ | .452 | .214 |
| Group Centroids | | |
| Group 1 Gainers | -1.170 (N=11) | .670 (N=34) |
| Group 2 No Gainers | .379 (N=34) | -.316 (N=72) |

Head Start

| | | Predicted 1 | Predicted 2 |
|---|---|---|---|
| Actual | 1 | 7 | 4 |
| | 2 | 1 | 33 |

Non-Head Start

| | | Predicted 1 | Predicted 2 |
|---|---|---|---|
| Actual | 1 | 16 | 18 |
| | 2 | 8 | 64 |

1/Standardized discriminant coefficients in parentheses

*p < .1
**p < .05
***p < .01
See pages 9.10-9.11 for a discussion of the interpretation of table entries.

## *THE PRESCOTT-SRI COMPOSITE VARIABLES - BACKGROUND VARIABLES*

The set of discriminant analyses considered in this section involve the two Prescott-SRI composite variables discussed in Chapters 7 and 8. Tables 9.25 through 9.28 present results of background variable analyses for the physically handicapped, speech impaired, health or developmentally impaired, and mentally retarded, respectively. Children were identified as "gainers" (Group 1) if the standardized change score on these variables between the posttest and pretest exceeded .25. It should be recalled from Chapter 8 that gains with respect to Factor Scale 1 are not necessarily desirable (increases in behavior directed by or oriented toward adults). Gains on Factor Scale 2, however, were shown to have weak but generally significant associations with posttest developmental ages of the Alpern-Boll (increase in positive child-oriented interactions).

As indicated in Tables 9.25 through 9.28, the discriminatory capability of the background variables considered is weak. Wilks' Lambda is substantially less than .80 in only a few of the analyses presented, and in two of these instances there are too few children classified as "gainers" to yield meaningful interpretation (Factor Scale 1, Head Start mentally retarded enrollees and Factor Scale 2, non-Head Start health or developmentally impaired enrollees).

Interpretation of the coefficients associated with significant discriminating variables is complicated by the presence of some coefficients with values near or exceeding 1.0 (a result of too few cases for the number of coefficients estimated and resultant multicollinearity). Perhaps the only patterns that can be pointed out are 1) the presence of siblings is positively related to gains on Factor Scale 2 for children identified as speech impaired and health or developmentally impaired in both Head Start and non-Head Start programs; 2) severity of handicap mediates against gains on Factor Scale 1, but perhaps surprisingly, severity seems to have no

## TABLE 9.25

## WITHIN GROUPS DISCRIMINANT ANALYSIS FOR CHILDREN IDENTIFIED AS PHYSICALLY HANDICAPPED - BACKGROUND VARIABLES

## PRESCOTT-SRI FACTOR SCALE 1 AND FACTOR SCALE 2

| | **Head Start** | | **Non-Head Start** | |
|---|---|---|---|---|
| | **Factor Scale 1** | **Factor Scale 2** | **Factor Scale 1** | **Factor Scale 2** |
| Variables in the Discriminant Function[1/] | Father's Education (1.174)<br>Mother's Occupation (.434)<br>Father's Occupation (-.588)<br>Income (-.430) | Chronological Age (-.480)<br>Multiple Handicap (-.302)<br>White (-.1.073)<br>Black (-1.032)<br>Mother's Occupation (-.302)<br>Father's Occupation (.310) | Mother's Education (-.957)<br>Home Environ. (.778) | Black (-.450)<br>Mother's Education (-.471,<br>Father's Occupation (.692)<br>Income (-.374)<br>Home Environ. (-.462) |
| Wilk's Lambda | .868 | .797 | .816 | .785 |
| $\chi^2$ | 9.170* | 14.518** | 10.353*** | 12.011** |
| | (df: 4) | (df: 6) | (df: 2) | (df: 5) |
| Canonical $R^2$ | .131 | .203 | .184 | .215 |
| Group Centroids | | | | |
| Group 1 Gainers | -.747 (N=13) | .700 (N=20) | .626 (N=17) | -1.626 (N=4) |
| Group 2 No Gainers | .174 (N=56) | -.286 (N=49) | -.288 (N=37) | .130 (N=50) |
| | Predicted | Predicted | Predicted | Predicted |
| | 1 2 | 1 2 | 1 2 | 1 2 |
| Actual 1 | 2 11 | 7 13 | 7 10 | 1 3 |
| Actual 2 | 2 54 | 3 46 | 4 33 | 2 48 |

[1/] Standardized discriminant coefficients in parentheses

* = P < .1
** = P < .05
*** = P < .01

See pages 9.10-9.11 for a discussion of the interpretation of table entries.

## TABLE 9.26

## WITHIN GROUPS DISCRIMINANT ANALYSIS FOR CHILDREN IDENTIFIED AS SPEECH IMPAIRED - BACKGROUND VARIABLES

### PRESCOTT-SRI FACTOR SCALE 1 AND FACTOR SCALE 2

|  | Head Start |  | Non-Head Start |  |
|---|---|---|---|---|
|  | Factor Scale 1 | Factor Scale 2 | Factor Scale 1 | Factor Scale 2 |
| Variables in Discriminant Function[1/] | Severity (-.364)<br>Chronological Age (.434)<br>Siblings (.442)<br>Father's Education (-.547)<br>Father's Occupation (.939) | Siblings (.877)<br>Mother's Education (.709) | Severity (-.506)<br>Multiple Handicap (-.461)<br>White (-.678)<br>Black (-.907)<br>Male (-.428) | Chronological Age (.363)<br>Siblings (.436)<br>Male (.802)<br>Income (-.412)<br>Home Environ. (.315) |
| Wilk's Lambda | .849 | .908 | .847 | .647 |
| $\chi^2$ | 17.163*** | 10.260*** | 7.553 | 19.834*** |
|  | (df: 5) | (df: 2) | (df: 5) | (df: 5) |
| Canonical $R^2$ | .151 | .092 | .152 | .352 |
| Group Centroids |  |  |  |  |
| Group 1 Gainers | -.530 (N=38) | -.422 (N=37) | .387 (N=25) | .899 (N=15) |
| Group 2 No Gainers | .283 (N=71) | .217 (N=72) | -.387 (N=25) | -.385 (N=35) |

|  | Predicted |  | Predicted |  | Predicted |  | Predicted |  |
|---|---|---|---|---|---|---|---|---|
|  | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 |
| Actual 1 | 17 | 21 | 10 | 27 | 14 | 11 | 10 | 5 |
| Actual 2 | 9 | 62 | 12 | 60 | 8 | 17 | 3 | 32 |

[1/] Standardized discriminant coefficients in parentheses

* =P < .1
** =P < .05
*** =P .01

See pages 9.10-9.11 for a discussion of the interpretation of table entries.

## TABLE 9.27

## WITHIN GROUPS DISCRIMINANT ANALYSIS FOR CHILDREN IDENTIFIED AS HEALTH OR DEVELOPMENTALLY IMPAIRED - BACKGROUND VARIABLES

### PRESCOTT-SRI FACTOR SCALE 1 AND FACTOR SCALE 2

| | Head Start | | Non-Head Start | |
|---|---|---|---|---|
| | Factor Scale 1 | Factor Scale 2 | Factor Scale 1 | Factor Scale 2 |
| Variables in the Discriminant Function[1] | Severity (.602)<br>White (.745)<br>Mother's Occupation (.411)<br>Income (-.616)<br>Home Environ. (.304) | Siblings (-.470)<br>White (.913)<br>Black (.651)<br>Previous Program Experience (.405)<br>Mother's Education (-.426)<br>Mother's Occupation (-.298)<br>Father's Occupation (.511) | Chronological Age (.558)<br>Father's Occupation (-.636)<br>Home Environ. (.627) | Severity (.187)<br>Siblings (-.510)<br>Multiple Handicap (.526)<br>Male (-.344)<br>Previous Program Experience (-.942)<br>Father's Education (-.429)<br>Income (.444) |
| Wilk's Lambda | .768 | .767 | .810 | .248 |
| $\chi^2$ | 15.464***<br>(df: 5) | 15.246**<br>(df: 7) | 5.361<br>(df: 3) | 32.741***<br>(df: 7) |
| Canonical $R^2$ | .232 | .233 | .189 | .75[illegible] |
| Group Centroids | | | | |
| Group 1 Gainers | .701 (N=20) | -.553 (N=27) | .638 (N=9) | -4.509 (N=1) |
| Group 2 No Gainers | -.326 (N=43) | .415 (N=36) | -.287 (N=20) | .161 (N=28) |
| | Predicted | Predicted | Predicted | Predicted |
| | 1 \| 2 | 1 \| 2 | 1 \| 2 | 1 \| 2 |
| Actual 1 | 9 \| 11 | 17 \| 10 | 3 \| 6 | 1 \| 0 |
| Actual 2 | 6 \| 37 | 6 \| 30 | 2 \| 18 | 0 \| 28 |

---

[1] Standardized discriminant coefficients in parentheses

* =p < .1
** =p < .05
*** =p < .01

See pages 9.10-9.11 for a discussion of the interpretation of table entries.

## TABLE 9.28

## WITHIN GROUPS DISCRIMINANT ANALYSIS FOR CHILDREN IDENTIFIED AS MENTALLY RETARDED - BACKGROUND VARIABLES

### PRESCOTT-SRI FACTOR SCALE 1 AND FACTOR SCALE 2

| | Head Start | | Non-Head Start | |
|---|---|---|---|---|
| | Factor Scale 1 | Factor Scale 2 | Factor Scale 1 | Factor Scale 2 |
| Variables in the Discriminant Function[1/] | Severity (-.947)<br>Multiple Handicap (.400)<br>White (-.292)<br>Male (2.77)<br>Mother's Education (-.611)<br>Father's Education (.461) | Multiple Handicap (.604)<br>White (-.608)<br>Male (-.354)<br>Mother's Education (.367) | Severity (-.209)<br>Chronological Age (-.471)<br>Siblings (-.498)<br>White (.436)<br>Male (-.200)<br>Previous Program Experience (-.242)<br>Father's Education (-.895)<br>Father's Occupation (.782) | White (.481)<br>Previous Program Experience (-.608)<br>Income (.630) |
| Wilk's Lambda | .699 | .706 | .701 | .939 |
| $\chi^2$ | 13.991** (df: 6) | 13.952** (df: 4) | 38.706*** (df: 8) | 6.995* (df: 3) |
| Canonical $R^2$ | .301 | .291 | .299 | .061 |
| Group Centroids | | | | |
| Group 1 Gainers | .886 (N=12) | -.828 (N=13) | .877 (N=32) | .843 (N=9) |
| Group 2 No Gainers | -.332 (N=32) | .347 (N=31) | -.338 (N=83) | -.072 (N=106) |

| | Predicted | |
|---|---|---|
| | 1 | 2 |
| Actual 1 | 7 | 5 |
| 2 | 1 | 31 |

| | Predicted | |
|---|---|---|
| | 1 | 2 |
| Actual 1 | 7 | 6 |
| 2 | 2 | 29 |

| | Predicted | |
|---|---|---|
| | 1 | 2 |
| Actual 1 | 17 | 15 |
| 2 | 4 | 79 |

| | Predicted | |
|---|---|---|
| | 1 | 2 |
| Actual 1 | 0 | 9 |
| 2 | 0 | 106 |

---

[1/] Standardized discriminant coefficients in parentheses

* = $p < .1$
** = $p < .05$
*** = $p < .01$

See pages 9.10-9.11 for a discussion of the interpretation of table entries.

discriminatory relationship with respect to Factor Scale 2; and 3) parent/child exchanges and activities are positively related to "gains" on both scales when this particular variable appears in a given discriminant function.

### *THE PRESCOTT-SRI COMPOSITE VARIABLES - PROGRAM VARIABLES*

The relationship of program variables to the Prescott-SRI composite variables are presented in Tables 9.29 through 9.32. As in almost all the preceding analyses present, program variables poorly distinguish between "gainers" and "no gainers" with respect to both composite variables. Small samples of "gainers" again preclude meaningful interpretation of much of the data presented in Tables 9.29 through 9.32. There is the interesting trend, though, for class structure/process variables (class size, class handicap/nonhandicap ratio, and percentage of time a child spends in a mainstream setting during the course of program day) appear frequently as significant discriminating variables relative to other program variables for both composite variables among physically handicapped, speech impaired, and health or developmentally impaired children (Tables 9.29, 9.30, and 9.31, respectively). For mentally retarded children, however, teacher-related variables are prominant.

### Summary

The results of the within-groups analyses presented in this chapter must be interpreted with great care. Only very broad generalizations are possible.

Relative to a child's background characteristics, study data indicated that:

- background characteristics indicating handicap severity, and family-related variables do not distinguish between children who are likely to realize developmental gains, particularly among children enrolled in Head Start.
- There is some evidence to indicate that gains in classroom social skills (narrowly defined as the child's ability to function in and adjust to the classroom environment) are enhanced in part by the degree to which a child encounters parent interaction and exchange in the home.

## TABLE 9.29

## WITHIN GROUPS DISCRIMINANT ANALYSIS FOR CHILDREN IDENTIFIED AS PHYSICALLY HANDICAPPED - PROGRAM VARIABLES

## PRESCOTT-SRI FACTOR SCALE 1 AND FACTOR SCALE 2

| | Head Start | | Non-Head Start | |
|---|---|---|---|---|
| | Factor Scale 1 | Factor Scale 2 | Factor Scale 1 | Factor Scale 2 |
| Variables in the Discriminant Function[1/] | Class Size (.288)<br>Class Handicap Ratio (-.585)<br>Curriculum (-.588) | Teacher's Salary (.972)<br>Parent Involvement (-.533) | Teacher's Experience (.321)<br>Class Handicap Ratio (-.863)<br>Program Experience (.443) | Teacher's Education (-.834)<br>Teacher's Salary (1.081)<br>Class Size (.365)<br>Class Handicap Ratio (.745)<br>Curriculum (-.457)<br>Pupil Expenditure (-.283) |
| Wilk's Lambda | .820 | .942 | .765 | .721 |
| $\chi^2$ | 13.001*** | 3.928 | 13.232*** | 15.715** |
| | (df: 3) | (df: 2) | (df: 3) | (df: 6) |
| Canonical $R^2$ | .179 | .057 | .234 | .278 |
| Group Centroid | | | | |
| Group 1 Gainers | -.874 (N=13) | .374 (N=20) | .730 (N=16) | -1.832 (N=4) |
| Group 2 No Gainers | .203 (N=56) | -.152 (N=49) | -.315 (N=37) | .150 (N=49) |

| | Predicted | | Predicted | | Predicted | | Predicted | |
|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 |
| Actual 1 | 3 | 10 | 2 | 18 | 4 | 12 | 2 | 2 |
| Actual 2 | 3 | 53 | 1 | 48 | 0 | 37 | 1 | 48 |

[1/] Standardized discriminant ccefficients in parentheses

* $= P < .1$
** $= P < .05$
*** $= P < .01$

See pages 9.10-9.11 for a discussion of the interpretation of table entries.

## TABLE 9.30

## WITHIN GROUPS DISCRIMINANT ANALYSIS FOR CHILDREN IDENTIFIED AS SPEECH IMPAIRED - PROGRAM VARIABLES

### PRESCOTT-SRI FACTOR SCALE 1 AND FACTOR SCALE 2

| | Head Start | | Non-Head Start | |
|---|---|---|---|---|
| | Factor Scale 1 | Factor Scale 2 | Factor Scale 1 | Factor Scale 2 |
| Variables in the Discriminant Function[1/] | Teacher's Salary (-.780)<br>Class Size (.552)<br>% of Time Mainstreamed (-.596)<br>Curriculum (-.520) | Teacher's Experience (-.405)<br>Class Size (.572)<br>Class Handicap Ratio (.416)<br>% of Time Mainstreamed ( .440)<br>Pupil Expenditure (-.424) | Teacher's Salary (.755)<br>Class Handicap Ratio (-.789)<br>Number of Volunteers (-.308) | Teacher's Salary (-.643)<br>% of Time Mainstreamed (-1.030)<br>Pupil Expenditure (-.327) |
| Wilk's Lambda | .928 | .916 | .751 | .689 |
| $\chi^2$ | 7.829* | 9.140 | 13.312*** | 17.334*** |
| | (df: 4) | (df: 5) | (df: 3) | (df: 3) |
| Canonical $R^2$ | .072 | .084 | .249 | .311 |
| Group Centroid | | | | |
| Group 1 Gainers | -.364 (N=38) | .409 (N=36) | -.494 (N=25) | -.844 (N=15) |
| Group 2 No Gainers | .197 (N=70) | -.205 (N=72) | .494 (N=25) | .362 (N=35) |

Predicted

| | | 1 | 2 |
|---|---|---|---|
| Actual | 1 | 13 | 25 |
| | 2 | 4 | 66 |

Predicted

| | | 1 | 2 |
|---|---|---|---|
| Actual | 1 | 7 | 29 |
| | 2 | 5 | 67 |

Predicted

| | | 1 | 2 |
|---|---|---|---|
| Actual | 1 | 20 | 5 |
| | 2 | 7 | 18 |

Predicted

| | | 1 | 2 |
|---|---|---|---|
| Actual | 1 | 8 | 7 |
| | | 3 | 32 |

[1/] Standardized discriminant coefficients in parentheses

* =$p < .1$
** =$p < .05$
*** =$p < .01$

See pages 9.10-9.11 for a discussion of the interpretation of table entries.

## TABLE 9.31

## WITHIN GROUPS DISCRIMINANT ANALYSIS FOR CHILDREN IDENTIFIED AS HEALTH OR DEVELOPMENTALLY IMPAIRED - PROGRAM VARIABLES

## PRESCOTT-SRI FACTOR SCALE 1 AND FACTOR SCALE 2

| | Head Start | | Non-Head Start | |
|---|---|---|---|---|
| | Factor Scale 1 | Factor Scale 2 | Factor Scale 1 | Factor Scale 2 |
| Variables in the Discriminant Function1/ | Teacher's Experience (-.634)<br>Teacher's Education (-.438)<br>Program Experience (- 6.6) | % of Time Mainstreamed (.484)<br>Number of Volunteers (.753) | Teacher's Experience (.508)<br>Teacher's Education (.403)<br>Class Handicap Ratio (-.661)<br>Teacher's Specialization (.908)<br>% of Time (-.799)<br>Curriculum (.328)<br>Parent Involvement (-.395)<br>Pupil Expenditure (-.396) | Teacher's Education (.806)<br>Teacher's Specialization (-.603)<br>Program Experience (.784) |
| Wilk's Lambda | .917 | .889 | .462 | .834 |
| $\chi^2$ | 5.188<br>(df: 3) | 7.030**<br>(df: 2) | 16.992**<br>(df: 8) | 4.459<br>(df: 3) |
| Canonical $R^2$ | .083 | .110 | .538 | .166 |
| Group Centroids | | | | |
| Group 1 Gainers | -.430 (N=20) | .381 (N=27) | 1.139 (N=8) | -2.082 (N=1) |
| Group 2 No Gainers | .195 (N=40) | -.286 (N=36) | -.456 (N=20) | .077 (N=27) |

Head Start, Factor Scale 1

| | | Predicted 1 | Predicted 2 |
|---|---|---|---|
| Actual | 1 | 3 | 17 |
| | 2 | 3 | 40 |

Head Start, Factor Scale 2

| | | Predicted 1 | Predicted 2 |
|---|---|---|---|
| Actual | 1 | 13 | 14 |
| | 2 | 9 | 27 |

Non-Head Start, Factor Scale 1

| | | Predicted 1 | Predicted 2 |
|---|---|---|---|
| Actual | 1 | 6 | 2 |
| | 2 | 2 | 18 |

Non-Head Start, Factor Scale 2

| | | Predicted 1 | Predicted 2 |
|---|---|---|---|
| Actual | 1 | 0 | 1 |
| | 2 | 0 | 27 |

1/Standardized discriminant coefficients in parentheses

* =p < .1
** =p < .05
*** =p < .01

See pages 9.10-9.11 for a discussion of the interpretation of table entries.

TABLE 9.32

### WITHIN GROUPS DISCRIMINANT ANALYSIS FOR CHILDREN IDENTIFIED AS MENTALLY RETARDED - PROGRAM VARIABLES

PRESCOTT-SRI FACTOR SCALE 1 AND FACTOR SCALE 2

| | Head Start | | Non-Head Start | |
|---|---|---|---|---|
| | Factor Scale 1 | Factor Scale 2 | Factor Scale 1 | Factor Scale 2 |
| Variables in the Discriminant Function[1/] | Teacher's Salary (-.994)<br>% of Time Mainstreamed (-.465)<br>Pupil Expenditure (-.313) | Teacher's Experience (.261)<br>Teacher's Education (-.612)<br>Teacher's Salary (1.101)<br>Class Handicap Ratio (-.797)<br>Teacher's Specialization (-.446)<br>Parent Involvement (-.428)<br>Pupil Expenditure (-.486) | Teacher's Experience (.197)<br>Teacher's Education (-.293)<br>Teacher's Salary (.279)<br>Class Size (.827)<br>Class Handicap Ratio (.484)<br>Teacher's Specialization (-.393)<br>Program Experience (-.472)<br>Number of Volunteers (.297) | Teacher's Education (-.60)<br>Class Handicap Ratio (.315)<br>Teacher's Specialization (.490)<br>% of Time Mainstreamed (-.545)<br>Number of Volunteers (.254) |
| Wilk's Lambda | .704 | .598 | .712 | .832 |
| $\chi^2$ | 14.203*** | 19.818*** | 36.032*** | 19.758*** |
| | (df: 3) | (df: 7) | (df: 8) | (df: 5) |
| Canonical $R^2$ | .295 | .401 | .288 | .168 |
| Group Centroids | | | | |
| Group 1 Gainers | -.878 (N=12) | -.968 (N=13) | .864 (N=31) | -1.471 (N=8) |
| Group 2 No Gainers | .329 (N=32) | .406 (N=31) | -.331 (N=81) | .113 (N=104) |

Head Start, Factor Scale 1 — Predicted

| Actual | 1 | 2 |
|---|---|---|
| 1 | 7 | 5 |
| 2 | 4 | 28 |

Head Start, Factor Scale 2 — Predicted

| Actual | 1 | 2 |
|---|---|---|
| 1 | 7 | 6 |
| 2 | 2 | 29 |

Non-Head Start, Factor Scale 1 — Predicted

| Actual | 1 | 2 |
|---|---|---|
| 1 | 14 | 17 |
| 2 | 6 | 75 |

Non-Head Start, Factor Scale 2 — Predicted

| Actual | 1 | 2 |
|---|---|---|
| 1 | 3 | 5 |
| 2 | 3 | 101 |

[1/] Standardized discriminant coefficients in parentheses

* = $p < .1$
** = $p < .05$
*** = $p < .01$

See pages 9.10-9.11 for a discussion of the interpretation of table entries.

- Children exhibiting increased positive peer interactions come from homes in which there is relatively greater child/parent interaction and exchange, at least among non-Head Start children.

Investigation of program variables which serve to enhance the realization of program objectives revealed few stable variable patterns. There was limited evidence, though, to support the following tentative conclusions:

- Among Head Start enrollees, teacher experience was more strongly associated with positive program outcomes than teacher salaries or formal teacher preparation for all handicaps except mental retardation.
- Small class size, a high proportion of non-handicapped classmates, and extensive mainstreaming were associated with successful program outcomes for certain handicapping conditions among Head Start children.

A summary of the background and program variables consistently associated with program outcomes discussed in this chapter is presented in Tables 9.33 and 9.34. This summary is developed across handicapping conditions which means that results presented in these tables may vary for individual handicapping conditions. It should also be recognized that this summary is not necessarily based solely on the results of statistically significant ($\alpha \leq .1$) discriminant functions.

## TABLE 9.35

## SUMMARY OF BACKGROUND VARIABLES EXHIBITING CONSISTENT ASSOCIATIONS WITH STUDY OUTCOME VARIABLES FOR WITHIN-GROUP ANALYSES

| | (Tables 9.1-9.8) | | | | | | | | | | (Tables 9.17-9.20) | | (Tables 9.25-9.28) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Alpern-Boll Developmental Profile | | | | | | | | | | California Preschool Social Competency Scale | | Prescott-SRI Composite Variable | | | |
| | Physical Age | | Self-Help Age | | Social Age | | Academic Age | | Communication Age | | | | Factor Scale 1 | | Factor Scale 2 | |
| Background Variables | Head Start | Non-Head Start | Head Start | Non-Head Start | Head Start | Non-Head Start | Head Start | Non-Head Start | Head Start | Non-Head Start | Head Start | Non-Head Start | Head Start | Non-Head Start | Head Start | Non-Head Start |
| Severity of Handicap | | | | NG | | | | | | | NG | NG | G | NG | | |
| **Multiple Handicaps | NG | | | NG | | | | | | | | | | | NG | |
| Number of Siblings | | | | | | G | G | G | | | | G | | | | G |
| Previous Program Experience | | | | NG | | | | G | | | | | | | | |
| Chronological Age | | NG | | NG | | | | | | | | | | | | |
| Ethnicity | | | G[a] | | NG[b] | G[c] | | | | | G[c] | G[c] | | | | |
| Sex | | G[d] | NG[e] | | | | | | | | NG[e] | | | NG[e] | | G[d] |
| Mother's Education | | | | | NG | | | | | | | | | | NG | |
| Mother's Occupation | G | | | | | | | | | G | | NG | | | | |
| Father's Education | NG | | G | G | | | | | NG | | | | G | | | |
| Father's Occupation | NG | | | | | | | | | | | | | | | |
| Family Income | | | | G | | G | | | NG | | | | | | | G |
| Quality of Home Environment | G | | | | | | | | | | G | G | | G | | G |

a - black children are more likely to be in the "gainer" group than children of other ethnic backgrounds
b - black children are more likely to be in the "no gain" group than children of other ethnic backgrounds
c - white children are more likely to be in the "gainer" group than children with other ethnic backgrounds
d - male children are more likely to be in the "gainer" group than female children
e - male children are more likely to be in the "no gain" group than female children

G - as variable increases in value, children are more likely to evidence gains in outcome measure, all other things being equal, for two or more handicapping conditions (See notes below concerning variables with asterisks)

NG - as variable increases in value, children are more likely to evidence no gains in outcome measures beyond expected maturation, all other things being equal, for two or more handicapping conditions (See notes below concerning variables with asterisks)

Blank cell entries indicate increases or decreases in the value of the variable are either not associated with program outcomes or inconsistently related to these outcomes

**Definitions of "G" and "NG" should be read "presence of variable indicates..."

# TABLE 9.34

## SUMMARY OF PROGRAM VARIABLES EXHIBITING CONSISTENT ASSOCIATIONS WITH STUDY OUTCOME VARIABLES FOR WITHIN-GROUP ANALYSES

| | (Tables 9.9-9.16) | | | | | | | | | | (Tables 9.21-9.24) | | (Tables 9.29-9.32) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Alpern-Boll Developmental Profile | | | | | | | | | | California Preschool Social Competency Scale | | Prescott-SRI Composite Variable | | | |
| | Physical Age | | Self-Help Age | | Social Age | | Academic Age | | Communication Age | | | | Factor Scale 1 | | Factor Scale 2 | |
| Background Variables | Head Start | Non-Head Start | Head Start | Non-Head Start | Head Start | Non-Head Start | Head Start | Non-Head Start | Head Start | Non-Head Start | Head Start | Non-Head Start | Head Start | Non-Head Start | Head Start | Non-Hea |
| *Class Size | | | | | | | | | G | | | | NG | | | |
| *Handicap/Non-Handicap Ratio | | NG | | NG | | | | NG | G | | | NG | | G | | NG |
| Time in Mainstreaming | G | | | | | | G | | | | | | G | | G | |
| **Criterion-referenced Curriculum | | NG | G | | | | | | | | | G | G | | | |
| Teacher's Education | | | | | | | | | | | | | | | | G |
| Teacher's Salary | | | | | | G | NG | | NG | | | | G | | | |
| *** Teacher's Specialty | | | | G | | | | | | G | | | | | | |
| Teacher's Experience | G | | G | | | | G | | | | G | G | | G | | |
| Per Pupil Expenditures | | | | | | NG | NG | | | | | | | | | |
| Years of Program Service | | | | | | | | | | | G | NG | | | | |
| Parent Involvement | | | | | | | | | | | G | NG | | | | |
| Number of Volunteers | | | | G | | | | | G | | | NG | | | | |

G = as variable increases in value, children are more likely to evidence gains in outcome measure, all other things being equal, for two or more handicapping conditions (See notes below concerning variables with asterisks)

NG = as variable increases in value, children are more likely to evidence no gains in outcome measures beyond expected matuation, all other things being equal, for two or more handicapping conditions (See notes below concerning variables with asterisks)

Blank cell entries indicate increases or decreases in the value of the variable are either not associated with program outcomes or inconsistently related to these outcomes

*Definitions of "G" and "NG" should be read "as variable decreases..."

**Definitions of "G" and "NG" should be read "presence of variable indicates..."

*** Definitions of "G" and "NG" should be read "possession of a degree in special education or childhood development indicates . . ."

# 10

## SUMMARY AND CONCLUSIONS

In Chapter 1, reference was made to five broad study questions that served to guide the design, implementation, and analytical approach of the evaluation of the Head Start Handicapped effort. Despite the sometimes serious limitations of study data noted throughout the preceding chapters, these study data do permit the formulation of tentative answers to each of these questions.

*HOW DOES THE PROGRESS OF HANDICAPPED CHILDREN ENROLLED IN HEAD START COMPARE WITH THE PROGRESS OF HANDICAPPED CHILDREN RECEIVING NO SPECIAL SERVICES?*

Because of small samples of non-served children identified as blind, deaf, visually impaired, hearing impaired, learning disabled, and emotionally disturbed, comparisons between Head Start enrollees and non-served handicapped children had to be restricted to children identified as physically handicapped, speech impaired, health or developmentally impaired, and mentally retarded. With respect to gains in developmental growth as measured by the Alpern-Boll Developmental Profile, the data presented in Chapter 8 revealed few statistically significant differences between handicapped Head Start enrollees and non-served children. Exceptions to this general trend were observed among children identified as speech impaired. For these children, Head Start enrollees evidenced posttest developmental ages that were significantly greater than those of the non-served children in four out of five subscales (including the communication age subscale).

Other exceptions included the self-help age subscale among the physically handicapped and the physical age subscale among the mentally retarded.

Aside from the criterion of statistical significance, however, there is a consistency in the study data that is worth noting. With the exception of three analyses out of 20, Head Start children show adjusted mean posttest developmental ages that were greater than those of non-served children. While the differences were often small, the consistency of favorable Head Start outcomes, particularly over a relatively short duration (6 months), should be considered substantively important.

It can be stated with some confidence, then, that at least for the period considered in this study, handicapped children served in Head Start benefit developmentally relative to children receiving no services.

### *HOW DOES THE PROGRESS OF HANDICAPPED CHILDREN ENROLLED IN HEAD START COMPARE WITH THE PROGRESS OF HANDICAPPED CHILDREN ENROLLED IN OTHER PROGRAMS OF SERVICES, OTHER FACTORS BEING EQUAL?*

Like Head Start enrollees, handicapped children served by non-Head Start programs showed small but consistent developmental gains relative to non-served handicapped children. However, it was noted that the posttest outcomes for Head Start enrollees were generally equal to and often greater than those of the non-Head Start children. These differences, when they occur, were statistically significant in only two or three instances and a complicated study design and fallible covariates demand caution in the interpretation of these findings. Nevertheless, the consistency of analytical results is noteworthy.

With respect to other outcome measures, both Head Start and non-Head Start children show gains in classroom social skills as measured by the California Preschool Social Competency Scale. Whether differential program effects exist, though, was not ascertainable due to the failure of the data to meet critical assumptions underlying the analytical techniques utilized. Differential treatment effects were noted on posttest outcomes measured by two composite classroom interaction variables developed from the Prescott-SRI Child Observation System. Non-Head Start children evidenced increases in adult directed/oriented behaviors while Head Start children evidenced increases in positive child-oriented interactions and behaviors.

Overall, the comparison of Head Start and non-Head Start outcomes invites summarization at two levels. First, it can be concluded with reasonable confidence that benefits of program participation for handicapped children are comparable between Head Start and alternative preschool placements. That is, handicapped children can be expected to show progress in settings of either type relative to children who are unserved. That this is so underscores the importance of early intervention and remedial efforts aimed at preschool handicapped children.

At the second level, the consistency with which Head Start children demonstrated developmental gains beyond those children enrolled in non-Head Start programs, as marginal as these differences were, may indicate that at least for certain children, Head Start may be an advantageous placement. Taking this interpretation one step further, the differences noted between Head Start and non-Head Start programs relative to the Prescott-SRI composite classroom interaction variables and the relationship of these composite variables to developmental outcomes suggests that one reason for these systematic differences between programs may be Head Start's emphasis on mainstreaming. Head Start programs invariably mainstream handicapped children whereas mainstreaming was seldom-used strategy for children enrolled in non-Head Start programs.

This interpretation of differential program results is subject to other alternative explanations. For example, it is possible to argue that despite efforts to control for handicap severity, differential program effects may be a function of the fact that the non-Head Start group was generally more severely impaired than their

Head Start counterparts. However, the data are generally consistent with and support the proposition that mainstreaming may make a difference, and this is noteworthy. These data, when considered in the context of other research into programs for the handicapped, further reinforces the desirability of serving special children in the least possible restrictive environment.

### *WITHIN HEAD START PROGRAMS, WHAT VARIABLES EXPLAIN DIFFERENTIAL PROGRESS AMONG HANDICAPPED CHILDREN?*

To answer this particular question, Head Start enrollees were categorized into those who evidenced posttest outcomes that could reasonably be judged to exceed gains due solely to maturation ("gainers") and those whose posttest outcomes could be reasonably explained as largely maturational ("non-gainers"). Based on this dichotomization, two sets of variables were analyzed to see what, if any, patterns seemed to differentiate gainers from non-gainers. One set of variables included background characteristics of the child. The other set included characteristics of the program in which the child was enrolled.

Results of these analyses were generally inconclusive due to small sample sizes. However, with respect to background variables, the Head Start data suggested that a child's personal and family characteristics made little difference as to whether a child was likely to be a developmental "gainer". That is, whether a child is likely to benefit from a program of services does not seem to be related to the nature of the child's handicap, the severity of the handicap, nor any other personal/family circumstance the child brings to his/her program. This is not to say these characteristics might not differentially affect progress. However, these characteristics do not preclude the possibility of program benefits as long as the program of services emphasizes a strong parent/family involvement component. The Head Start data also suggested that parent involvement activities should address both parents (if both parents are present) in that father-related variables were more often identified as significant analytical variables than were mother-related variables.

Analysis of specific Head Start program variables indicated that those aspects of a program likely to benefit a given handicapped child are unclear. There is some evidence to indicate that the more experienced a child's Head Start teacher is, the more likely the child will be a "gainer," regardless of the teacher's formal (academic) training or salary level. The one possible exception to this generalization are children who are identified as mentally retarded, in which case teacher preparation (e.g., teachers with special education backgrounds) appeared to be equally as important as experience in realizing program benefits.

Data also suggested smaller Head Start classrooms may enhance the likelihood of program benefits. The proportion of program time spent in mainstreaming was an important positive developmental factor for children identified as physically handicapped and mentally retarded but relatively unimportant in the progress of children identified as speech impaired.

Relative to the development of classroom social skills and social interaction behaviors, Head Start data reinforce the need to take into consideration strong parent involvement efforts in the preparation of individual plans of services.

*DO THE VARIABLES THAT ACCOUNT FOR DEVELOPMENTAL PROGRESS AMONG CHILDREN ENROLLED IN HEAD START DIFFER FROM THOSE THAT ACCOUNT FOR PROGRESS AMONG CHILDREN ENROLLED IN NON HEAD START PROGRAMS?*

This is perhaps the most difficult of all study questions to answer. First, analytical results relating to this and the preceding study question are inconclusive. Second, Head Start and non-Head Start programs are so divergent that even in the light of consistent and stable within-program analytical results, comparisons between programs would be highly tenuous. Consequently, only the most general comparisons are possible.

With respect to background variables, non-Head Start children show the same overall trend as Head Start children. Background variables did not effectively predict which non-Head Start children most likely benefit from their programs of services. However, unlike Head Start enrollees, important variables identified in non-Head Start analysis included chronological age and handicap severity. These variables reflect circumstances over which a program can effect little, if any, control. To the extent that these variables are associated with children who exhibit no developmental growth beyond that due to maturation, then it may be concluded that there are relatively more children enrolled in non-Head Start programs whose personal circumstances mitigate against the realization of intended program benefits within the framework of a non-Head Start program of services. This may reflect the fact that non-Head Start children tend to be more severely impaired than children in Head Start or it may reflect a program/child interaction that differentiates Head Start from non-Head Start programs (e.g., the effects of mainstreaming).

Considering non-Head Start program variables and their systematic effect on intended program outcomes, the results of analyses were again inconclusive. Perhaps the most notable variable pattern observed was that, as in the case of Head Start, more experienced teachers seemed to be more often associated with children exhibiting developmental gains beyond those expected through maturation. However, unlike Head Start, it is not clear in the non-Head Start case that this relationship is independent of teachers' level of education or area of degree specialization.

Overall, then, analyses addressing the questions concerning the variables associated with intended program outcomes were marginally informative. In retrospect, this is not extremely surprising given the heterogeneous collection of programs in the study sample, the short interval between baseline and posttest data collection activities, and the current state-of-the-art instructional strategies utilized for handicapped children which emphasize individualization of program plans.

### *TO WHAT EXTENT DOES A HANDICAPPED CHILD'S ENROLLMENT IN HEAD START AFFECT HIS/HER PARENTS' ATTITUDES TOWARD AND INVOLVEMENT IN THE CHILD'S PROGRAM OF SERVICES?*

Data with four different foci were collected to answer this question - parental educational attitudes and values, parental attitudes toward the practice of mainstreaming, parental involvement in program activities as judged by program staff, and parent/child interactions and activities in the home. Regardless of handicapping condition or handicap severity, parents were uniformly positive in their attitudes toward mainstreaming. Most Head Start parents, moreover, expressed attitudes that would lead to the conclusion that they generally supported Head Start's efforts to meet the needs of their children. Further, most Head Start parents provided a supportive home environment for their children, at least relative to the home situations of non-served children and children enrolled in non-Head Start programs. Despite the generally high baseline values of these variables, none exhibited significant changes over the course of the evaluation effort.

The question of how these variables related to intended program outcomes was not considered in the context of this study. However, given the importance, theoretically and empirically, of parent involvement in program efforts to serve handicapped children, the observed lack of change was unexpected. It may be that the indicators selected were either too insensitive to change or were too normatively skewed to generate an accurate picture of Head Start parental commitment and values *vis-a-vis* program efforts to serve their particular children.

It can be stated, though, that given the measures utilized, parents' attitudes toward and their involvement in the child's program of services were strongly positive at the beginning of the program year and remained so throughout the study effort. This was so for parents of Head Start as well as non-Head Start children.

# APPENDIX A

## Technical Memorandum #1

## COMPARABILITY OF THE ALPERN-BOLL DEVELOPMENTAL PROFILE WITH THE LAP-D

## TECHNICAL MEMORANDUM NO. 1

## COMPARABILITY OF THE ALPERN-BOLL DEVELOPMENTAL PROFILE WITH THE LAP-D

Since three primary study objectives required developmental assessment of each handicapped child, it was necessary to select an instrument that was sensitive both to differences across several distinct abilities and also to areas of growth and development during the pre-post interim. The Alpern-Boll Developmental Profile, a parent report instrument which assesses developmental growth of the child, was selected as the primary measure.

However, previous experience with the use of parent-report information to assess growth and development of the child by ACYF indicated that the validity of a direct functional child assessment might be substantially better than parent-report data, which are essentially once removed. The Alpern-Boll was selected for the following reasons:

1. reduces respondent burden;
2. minimizes classroom disruption by not requiring the child to be present for administration;
3. reduces the expense and time of training certified evaluators;
4. offers one additional measure (social-emotional) in an area deemed to be of critical importance at the preschool level;
5. provides a full range of measurement in the Self Help area;
6. provides a streamlined measure of physical development skills.

Because the validity of using the parent report information was considered questionable by ACYF, the validity of information obtained from the Alpern-Boll was compared with direct child assessment data secured from the diagnostic version of the Learning Accomplishment Profile (LAP-D).

## ANALYTICAL PROCEDURE: ALPERN-BOLL AND LAP-D CORRELATION SUBSTUDY

The LAP-D was administered to a subset of 127 children for whom pretest Alpern-Boll profiles were also collected, and to 111[1] children who were reassessed during the spring data collection. Table A.1 shows the distribution of this sample by handicapping condition. Most of the sample are speech impaired, learning disabled or emotionally disturbed.

The purpose of this sample of paired Alpern-Boll and LAP-D scores is to provide an assessment of the relationship of these two measures. Comparison of the correlation coefficients for the pretest scores and the posttest scores was judged to be a good, though conservative, indicator of this relationship.

## FINDINGS

Table A.2 presents a comparison of the pretest and posttest Pearson product moment correlations of the relevant Alpern-Boll and LAP-D subscales.

## DISCUSSION

The correlations between the LAP-D and the Alpern-Boll (shown in Table A.2) are for the most part consistent from pretest to posttest However, there are only four correlations which exceed a value of .70 (Academic Age with Cognitive Matching, r = .70; with Cognitive Total, r = .71; with Total Test, r = .73; and Communication Age with Cognitive Total, r = .70) and all four of these correlations are based on pretest data. No posttest correlations exceed a correlation value of .69.

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[1] Attrition from the pretest sample eliminated 16 cases.

TABLE A.1: DISTRIBUTION OF ALPERN-BOLL AND LAP-D SUBSTUDY SAMPLE BY HANDICAPPING CONDITION

| HANDICAPPING CONDITION | Alpern-Boll - LAP Sample | |
|---|---|---|
| | Pretest<br>% of Column | Posttest<br>% of Column |
| Total | 100.0<br>(N=127) | 100.0<br>(N=111)** |
| Visually Impaired | 0.8<br>(N-1) | 0.9<br>(N=1) |
| Blind | * | * |
| Hearing Impaired | 1.6<br>(N=2) | 1.8<br>(N=2) |
| Deaf | * | * |
| Physically Handicapped | 2.4<br>(N=3) | 2.7<br>(N=3) |
| Speech Impaired | 65.4<br>(N=83) | 64.0<br>(N=71) |
| Health or Developmentally Impaired | 6.3<br>(N=8) | 7.2<br>(N=8) |
| Mentally Retarded | 0.8<br>(N=1) | 0.9<br>(N=1) |
| Specific Learning Disabled | 10.2<br>(N=13) | 11.7<br>(N=13) |
| Seriously Emotionally Disturbed | 12.6<br>(N=16). | 10.8<br>(N=12) |

**Attrition from the pretest sample eliminated 16 cases.

TABLE A.2: ALPERN-BOLL AND LAP-D CORRELATIONS

| ALPERN-BOLL / LAP-D | Physical Age Pre | Physical Age Post | Self Help Age Pre | Self Help Age Post | Social Age Pre | Social Age Post | Academic Age Pre | Academic Age Post | Communication Age Pre | Communication Age Post | IQ Pre | IQ Post |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fine Motor | | | | | | | | | | | | |
| Manipulation | .38 | .51 | .45 | .46 | .58 | .44 | | | | | | |
| Writing | .47 | .58 | .52 | .45 | .46 | .56 | | | | | | |
| Total | .46 | .59 | .53 | .49 | .56 | .55 | | | | | | |
| Gross Motor | | | | | | | | | | | | |
| Body Movement | .48 | .52 | .45 | .46 | .51 | .51 | | | | | | |
| Object Movement | .48 | .47 | .45 | .38 | .54 | .44 | | | | | | |
| Total | .47 | .52 | .48 | .45 | .56 | .50 | | | | | | |
| Total Motor | .48 | .54 | | | | | | | | | | |
| Cognitive | | | | | | | | | | | | |
| Matching | | | .48 | .43 | .56 | .46 | .70 | .58 | .63 | .40 | | |
| Counting | | | .27 | .39 | .23 | .43 | .46 | .58 | .48 | .50 | | |
| Total | | | .46 | .47 | .50 | .59 | .71 | .68 | .70 | .53 | | |
| Language | | | | | | | | | | | | |
| Naming | | | .42 | .42 | .47 | .44 | .67 | .56 | .67 | .42 | | |
| Comprehension | | | .37 | .39 | .32 | .45 | .52 | .55 | .54 | .41 | | |
| Total | | | .41 | .42 | .40 | .47 | .63 | .60 | .64 | .45 | | |
| Total Test | .46 | .59 | .51 | .49 | .57 | .55 | .73 | .69 | .68 | .52 | .46 | .38 |

N=111

The Interim Technical Report (Rader, 1978) suggested that while the correlations were expected to be low because of the restricted range of the sample, "test fatigue" also contributed to depressed correlations between the Alpern-Boll Physical and LAP-D Motor scales. Although a fairly consistent improvement in posttest correlations is present, they are still considered low.

Table A.3 shows the distribution of mean changes and standard deviations for the LAP-D. Table A.4 shows the same information for this sample on the Alpern-Boll. The mean changes for the Alpern-Boll appear to be somewhat greater than for the LAP-D, and the standard deviations for the Alpern-Boll are substantially larger, suggesting not only greater mean change, but also greater variability. This is an important point, since the Interim Technical Report hypothesized that the Alpern-Boll, while not psychometrically equivalent to the LAP-D and only marginally comparable, may be a more suitable measure because of its increased sensitivity to change.[1/] Analysis of pre and posttest data does indeed indicate that the two measures are not particularly comparable and further suggests that the Alpern-Boll may well be a more sensitive measure of variability and change in this particular evaluation.

The purpose of this study objective is to examine the suitability of the Alpern-Boll as a measure of growth and development by comparing it with the LAP-D. It is evident that the two measures are not comparable for this sample of handicapped preschool children. How suitable is the Alpern-Boll, then with respect to reliability measuring change in handicapped children?

Table A.5 presents the pretest-posttest correlations of the LAP-D. For the most part they range from r = .63 to r = .81 with most of the correlations following in the mid to high .60's.

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[1/] A triple ceiling cutoff was used with the Alpern-Boll (9 consecutive "fails") whereas a single ceiling cutoff used with the LAP-D (3 consecutive "fails").

TABLE A.3: LAP-D PRETEST POSTTEST CHANGE SCORE DISTRIBUTION

| LAP-D Scales | Standard Deviation | Mean Change |
|---|---|---|
| Fine Motor | | |
| Manipulation | 4.5 | 3.4 |
| Writing | 4.7 | 4.8 |
| Total | 7.3 | 8.1 |
| Gross Motor | | |
| Body Movement | 6.9 | 4.8 |
| Object Movement | 4.3 | 2.7 |
| Total | 9.8 | 7.5 |
| Total Motor | 14.1 | 9.6 |
| Cognitive | | |
| Matching | 4.1 | 3.8 |
| Counting | 5.7 | 5.3 |
| Total | 13.2 | 15.4 |
| Language | | |
| Naming | 4.3 | 3.6 |
| Comprehension | 4.9 | 3.3 |
| Total | 8.3 | 6.7 |
| Total Test | 36.9 | 4.5 |

N = 111

TABLE A.4: ALPERN-BOLL PRETEST-POSTTEST CHANGE SCORE DISTRIBUTION

| ALPERN-BOLL SCALE | Standard Deviation | Mean Change |
|---|---|---|
| Physical Age | 15.8 | 7.3 |
| Self Help Age | 16.7 | 6.4 |
| Social Age | 15.5 | 6.2 |
| Academic Age | 10.4 | 9.7 |
| Communication Age | 14.5 | 9.7 |
| IQ | 19.7 | 6.1 |

N = 111

TABLE A.5: LAP-D PRE-POST CORRELATIONS

| LAP-D | Fine Motor | | | Gross Motor | | | Cognitive | | | Language | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Manipulation | Writing | Total | Body Movement | Object Movement | Total | Matching | Counting | Total | Naming | Comprehension | Total | Total Test |
| **Fine Motor** | | | | | | | | | | | | | |
| Manipulation | .71 | | | | | | | | | | | | |
| Writing | | .74 | | | | | | | | | | | |
| Total | | | .81 | | | | | | | | | | |
| **Gross Motor** | | | | | | | | | | | | | |
| Body Movement | | | | .64 | | | | | | | | | |
| Object Movement | | | | | .61 | | | | | | | | |
| Total | | | | | | .68 | | | | | | | |
| **Cognitive** | | | | | | | | | | | | | |
| Matching | | | | | | | .73 | | | | | | |
| Counting | | | | | | | | .63 | | | | | |
| Total | | | | | | | | | .77 | | | | |
| **Language** | | | | | | | | | | | | | |
| Naming | | | | | | | | | | .72 | | | |
| Comprehension | | | | | | | | | | | .48 | | |
| Total | | | | | | | | | | | | .67 | |
| Total Test | | | | | | | | | | | | | .74 |

N = 111

Although not a high standard for a test-retest estimate of reliability they are at least respectable. Table A.6 presents these pretest-posttest correlations for the Alpern-Boll samples ("1" represents the correlations on the sample of LAP-D substudy only, "2" represents the pre-post correlations on the entire Alpern-Boll sample, and "3" represents the entire Alpern-Boll sample with "outliers"[1] removed). As can be seen, the correlations on the LAP-D sample are relatively poor. However, using the sample as a whole and removing "outliers" which exceeded the established confidence interval, the correlations approximate excellent psychometric standards for test-retest reliability.

Further evidence of "validity" of the Alpern-Boll is shown in Table A.7 and in the accompanying graphs (Exhibits A.1 and A.2). Table A.7 presents the mean developmental pre and posttest ages by severity level. Exhibit A.1 shows the mean developmental posttest by severity level and Exhibit A.2 shows the same information for pretest data. The graphs illustrate the progressively lower mean developmental ages for progressively more severe handicapping conditions. This holds for both pre and posttest data and lends validity to the accuracy of the Alpern-Boll in assessing developmental status of the handicapped preschool child relative to other handicapped preschool children.

RECOMMENDATION:

The Alpern-Boll is judged to be an accurate assessment of developmental level for handicapped children relative to other handicapped children and perhaps has greater sensitivity to developmental change during the brief pre-post interim than the LAP-D in this particular evaluation.

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[1] "Outliers" are those cases whose raw pretest-posttest change scores exceeded a reasonable confidence interval. This is more fully explained in Technical Memorandum #3.

## TABLE A.6: ALPERN-BOLL PRETEST POSTTEST CORRELATIONS

| | Physical | Self Help | Social | Academic | Communication | IQ Equivalency |
|---|---|---|---|---|---|---|
| Physical Age | | | | | | |
| 1* | .67 | | | | | |
| 2* | .79 | | | | | |
| 3* | .89 | | | | | |
| Self Help Age | | | | | | |
| 1 | | .45 | | | | |
| 2 | | .80 | | | | |
| 3 | | .90 | | | | |
| Social Age | | | | | | |
| 1 | | | .74 | | | |
| 2 | | | .74 | | | |
| 3 | | | .88 | | | |
| Academic Age | | | | | | |
| 1 | | | | .72 | | |
| 2 | | | | .82 | | |
| 3 | | | | .88 | | |
| Communication Age | | | | | | |
| 1 | | | | | .56 | |
| 2 | | | | | .80 | |
| 3 | | | | | .93 | |
| IQ Equivalency | | | | | | |
| 1 | | | | | | .59 |
| 2 | | | | | | .77 |

1. Correlations on only those Alpern-Boll scores with LAP scores (N=111)
2. Correlations on all Alpern-Boll scores (N=830)
3. Correlations on all Alpern-Boll with outliers removed (N=771)

EXHIBIT A.1: POSTTEST ALPERN-BOLL MEAN DEVELOPMENTAL AGES BY SEVERITY LEVEL FOR ALL PROGRAM TYPES COMBINED

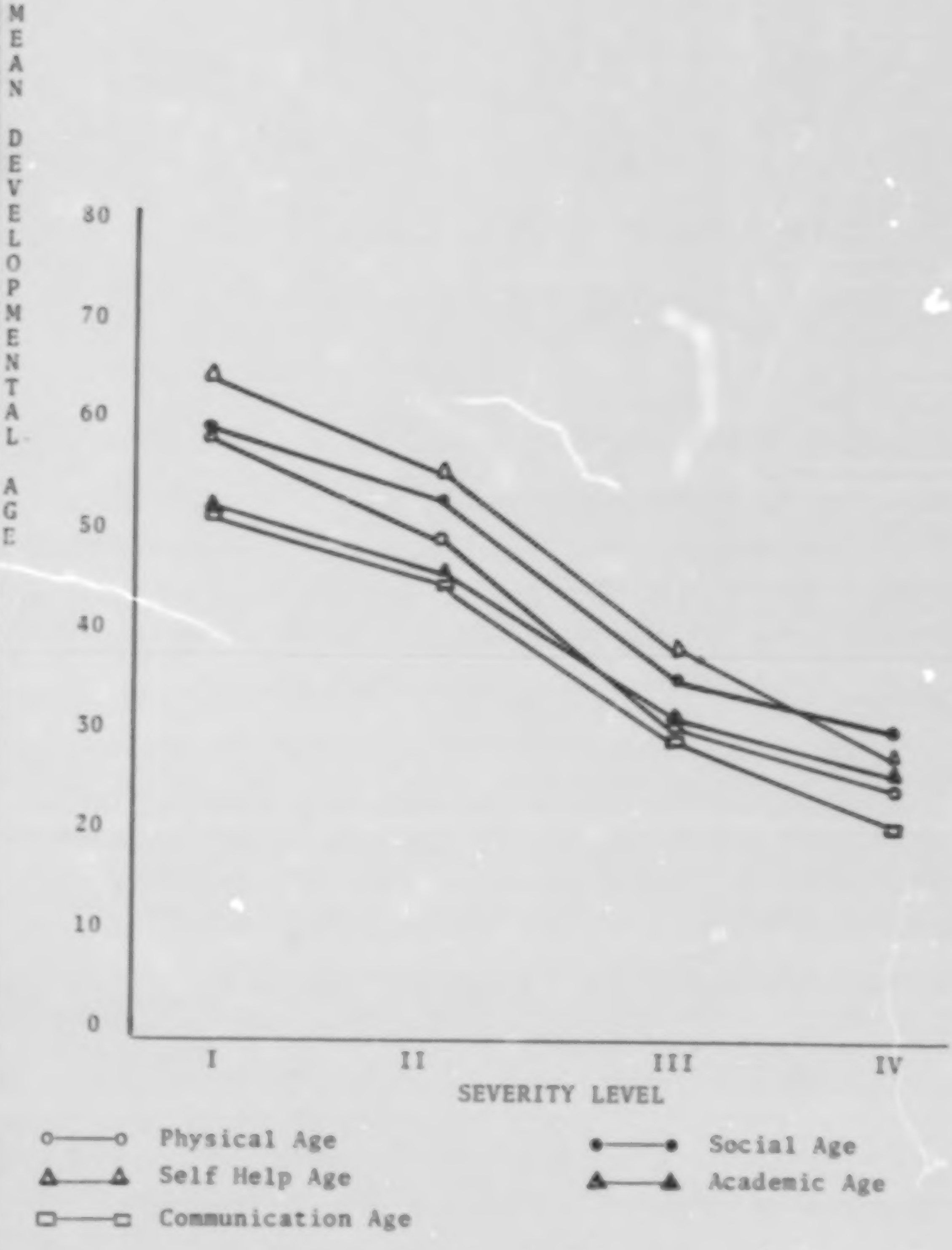
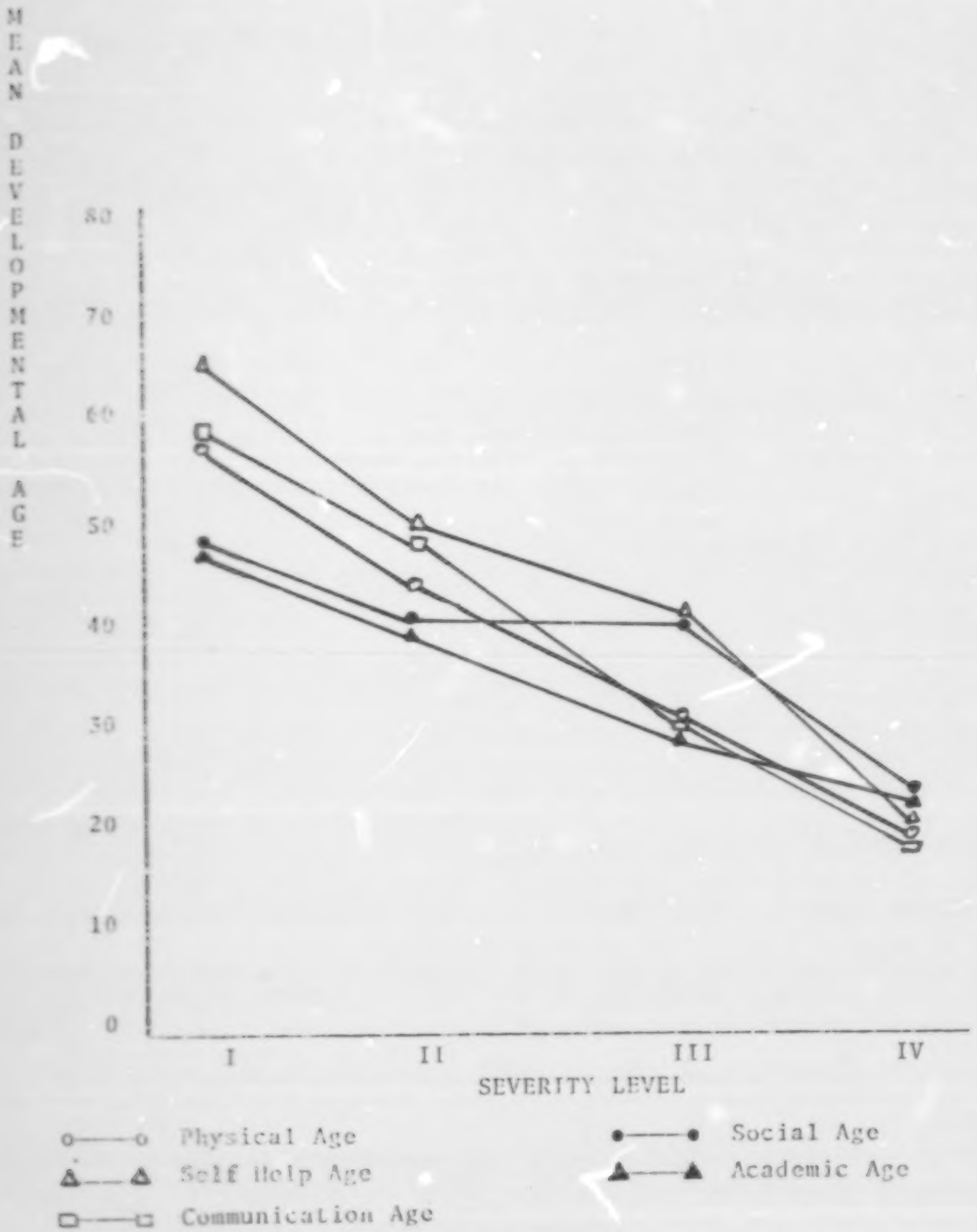


EXHIBIT A.2: PRETEST ALPERN-BOLL MEAN DEVELOPMENTAL AGES BY SEVERITY FOR ALL PROGRAM TYPES COMBINED



## TABLE A.7: ALPERN-BOLL PRETEST AND POSTTEST STANDARD DEVIATIONS BY SEVERITY LEVEL

| | Pretest | | Posttest* | | |
|---|---|---|---|---|---|
| | Variance | Mean | Variance | Mean | Mean Difference |
| Total | (N=936) | | (N=832) | | |
| Physical | 511.470 | 45.575 | 601.986 | 50.711 | + 5.136 |
| Self Help | 541.039 | 52.084 | 600.818 | 58.333 | + 6.249 |
| Social | 370.865 | 48.892 | 456.987 | 53.882 | + 4.990 |
| Academic | 282.820 | 41.364 | 366.043 | 47.512 | + 6.148 |
| Communication | 330.837 | 39.641 | 422.940 | 46.031 | + 6.390 |
| IQ | 818.417 | 77.986 | 859.945 | 79.785 | + 1.799 |
| SEVERITY 1 | (N=340) | | (N=294) | | |
| Physical | 417.269 | 57.196 | 642.964 | 58.804 | + 1.708 |
| Self Help | 377.760 | 63.728 | 630.671 | 65.570 | + 1.842 |
| Social | 277.715 | 58.544 | 526.794 | 59.209 | + .665 |
| Academic | 212.664 | 49.424 | 413.405 | 53.411 | + 3.987 |
| Communication | 257.394 | 48.497 | 451.704 | 52.028 | + 3.531 |
| IQ | 476.104 | 92.495 | 999.737 | 89.203 | - 3.292 |
| SEVERITY 2 | (N=367) | | (N=321) | | |
| Physical | 385.027 | 44.956 | 588.942 | 47.323 | + 2.367 |
| Self Help | 404.653 | 52.186 | 645.184 | 54.669 | + 2.483 |
| Social | 275.412 | 49.288 | 525.010 | 51.433 | + 2.145 |
| Academic | 227.917 | 41.125 | 397.596 | 44.192 | + 3.067 |
| Communication | 269.607 | 39.340 | 457.121 | 43.038 | + 3.698 |
| IQ | 630.891 | 76.387 | 903.385 | 73.265 | - 3.122 |
| SEVERITY 3 | (N=202) | | (N=160) | | |
| Physical | 431.045 | 33.669 | 544.028 | 32.166 | - 1.509 |
| Self Help | 522.083 | 40.464 | 722.569 | 39.160 | - 1.304 |
| Social | 338.070 | 39.215 | 511.521 | 36.409 | - 2.806 |
| Academic | 240.968 | 32.807 | 430.860 | 32.260 | - .547 |
| Communication | 276.739 | 31.006 | 469.220 | 30.845 | - .161 |
| IQ | 830.914 | 63.116 | 1297.804 | 56.343 | - 6.773 |
| SEVERITY 4 | (N=57) | | (N=57) | | |
| Physical | 538.571 | 22.000 | 842.872 | 25.053 | + 3.053 |
| Self Help | 490.123 | 23.193 | 897.707 | 28.153 | + 4.960 |
| Social | 357.623 | 26.860 | 736.608 | 31.772 | + 4.912 |
| Academic | 304.660 | 24.982 | 566.510 | 27.912 | + 2.93 |
| Communication | 353.837 | 20.351 | 482.480 | 21.807 | + 1.456 |
| IQ | 818.089 | 48.018 | 1471.720 | 48.316 | + .298 |

*Pretest and posttest sample sizes differ slightly due to attrition.

APPENDIX B

## Technical Memorandum #2

## THE TEACHER "SHORT FORM" OF THE ALPERN-BOLL DEVELOPMENTAL PROFILE AS AN ALTERNATIVE FORM IN THE EVENT OF PARENT ATTRITION OR POSTTEST ABSENCE

# TECHNICAL MEMORANDUM NO. 2

## THE TEACHER "SHORT FORM" OF THE ALPERN-BOLL DEVELOPMENTAL PROFILE AS AN ALTERNATIVE FORM IN THE EVENT OF PARENT ATTRITION OR POSTTEST ABSENCE

Although all programs and parents participating in the pretest data collection also agreed to participate in the posttest data collection efforts, any occurance of parental absence during the posttest would render the primary dependent measure of developmental growth for the child (the Alpern-Boll) unobtainable. Applied Management Sciences anticipated that even with concerted follow-up efforts and parent incentives some amount of attrition could be expected.

If this attrition were to occur in handicap categories in which the pretest sample size was very small (25 or fewer cases), elimination of even a single case could be damaging to analysis efforts. It was crucial, therefore, to carefully consider alternatives to eliminating a case from the study sample.

Every effort was made to invest the additional effort and resources to ultimately secure every parent interview. This often meant traveling to a separate interview site or returning to the original site at a more convenient time. In 52 cases this did not prove to be feasible (the parent was ill, deceased, could not be located, or was otherwise unavailable), and a special effort to collect the data from the teacher using the teacher "short form" was made. The primary analytical issue here is to what extent these scores on the teacher "short form" are comparable to scores on the regular parent administered form of the Alpern-Boll for this sample of handicapped preschool children.

### ANALYTICAL PROCEDURE: CORRELATION SUBSTUDY OF RANDOMLY SELECTED CHILDREN

Because Applied Management Sciences anticipated possible parent attrition, field staff were directed to administer to the teachers of a group of randomly selected children, a teacher "short form" of the Alpern-Boll Developmental Profile developed by the Appalachian Educational Laboratory, West Virginia. This pretest information was then to be used to estimate the suitability of the teacher "short form" as an alternative in the event that the parent could not be interviewed to provide the child growth and development information. A second administration of the "short form" during posttest data collection would serve to verify the stability of the relationship between the two measures. Table B.1 shows that the distribution of these two samples, by handicapping condition, are comparable.

TABLE B.1: DISTRIBUTION OF ALPERN-BOLL LONG-SHORT SUBSTUDY SAMPLE BY HANDICAPPING CONDITION

| HANDICAPPING CONDITION | Pretest % OF COLUMN | Posttest % OF COLUMN |
|---|---|---|
| Total | 100.0<br>(n=122) | 100.0<br>(n=137) |
| Visually Impaired | 4.9<br>(n=6) | 4.4<br>(n=6) |
| Blind | 0.8<br>(n=1) | * |
| Hearing Impaired | 3.3<br>(n=4) | 4.4<br>(N=6) |
| Deaf | 1.6<br>(n=2) | * |
| Physically Handicapped | 22.1<br>(n=27) | 13.1<br>(n=18) |
| Speech Impaired | 23.8<br>(n=29) | 24.8<br>(n=34) |
| Health or Developmentally Impaired | 14.8<br>(n=18) | 12.4<br>(n=17) |
| Mentally Retarded | 16.4<br>(n=20) | 23.4<br>(n=32) |
| Specific Learning Disabled | 6.6<br>(n=8) | 8.0<br>(n=11) |
| Seriously Emotionally Disturbed | 5.7<br>(n=7) | 9.5<br>(n=13) |

## FINDINGS

Table B.2 presents the Pearson product-moment correlation coefficients for the two pretest forms of the Alpern-Boll. Two subscales (Academic Age and Communication Age scales) and the IQ equivalency score showed good correlation coefficients for the two forms. These three correlation coefficients assume even more significance in light of the restriction of ranges in the sample, a factor which can be expected to artificially lower these coefficients. The three scales with relatively low correlation coefficients (Physical, Self Help, and Social Age Scales) did not appear to provide enough explained pretest variance to make their inclusion as an alternative measure useful. While these correlation coefficients were expected to be lower than might have been achieved with a better distributed range of cases, it was determined that too much variability between scores existed which could not otherwise be accounted for. The Interim Technical Report suggested that baseline unfamiliarity with the child on the part of the teacher resulted in excessive variation between the two forms of the Alpern-Boll. Although both the Academic Age scale and the Communication Age Scale showed correlations which were adequate, they were expected to be low estimates. If the excessive variability between the long and short forms of the Alpern-Boll was a consequence of teacher unfamiliarity with the actual

TABLE B.2: ALPERN-BOLL LONG AND SHORT PRETEST CORRELATIONS

| Long Form \ Short Form | Physical Age | Self Help Age | Social Age | Academic Age | Communication Age | IQ Equivalency |
|---|---|---|---|---|---|---|
| Physical Age | .47 | | | | | |
| Self Help Age | | .57 | | | | |
| Social Age | | | .54 | | | |
| Academic Age | | | | .74 | | |
| Communication Age | | | | | .69 | |
| IQ Equivalency | | | | | | .69 |

N=121

capabilities of handicapped children at the beginning of a program year, then increased teacher familiarity should result in stronger long/short Alpern-Boll correlations at the end of the program year.

Table B.3 presents the Pearson product-moment correlation coefficients for the two posttest forms of the Alpern-Boll.

TABLE B.3: ALPERN-BOLL LONG AND SHORT POSTTEST CORRELATIONS

| Short Form / Long Form | Physical Age | Self Help Age | Social Age | Academic Age | Communication Age | IQ |
|---|---|---|---|---|---|---|
| Physical Age | .65 | | | | | |
| Self Help Age | | .60 | | | | |
| Social Age | | | .63 | | | |
| Academic Age | | | | .78 | | |
| Communication Age | | | | | .73 | |
| IQ Equivalency | | | | | | .71 |

N=137

DISCUSSION:

All three scales which showed reasonably good correlations on the pretest data, the IQ Equivalency score and the Academic and the Communication Age scales, showed good correlations again on the posttest data. The expected gain in correlations (presumably resulting from increased teacher familiarity with the handicapped child) occurred for all six scales of the Alpern-Boll. Although the increase in correlation coefficients from pretest to posttest was greatest for the three scales which had not previously shown reasonably good correlations, all six scales consistently demonstrated improved correlations.

Table B.4 presents the standard deviations for the pretest and posttest scores for these study samples. The pretest standard deviations for the parent administered form are higher than the teacher "short form" on all scales except the academic scale. On the academic scale the teacher form has a slightly higher standard deviation ($\sigma$=16.8) compared with the parent form ($\sigma$=16.1). This suggests greater variance among scores with the parent form while the teacher "short form" tended to result in scores which were more alike. Presumably, if the parent form is a more accurate assessment, and if the teacher is more familiar with the handicapped child being assessed, then post test variances on the scales of the teacher form would more closely approximate those of the parent form. In fact, Table B.4 shows that the posttest standard deviations on the teacher "short form" showed marked increases on all scales except the Self Help Age, which was already fairly comparable with the parent form. This suggests that the teacher ratings become more like the parent ratings-as confirmed by the increased correlations between subscales.

With the restricted range considerations of the study sample, these correlations were judged to be sufficient indications of comparability, especially for analysis efforts using the Academic Age scale and the Communication Age scale.

## RECOMMENDATIONS:

The teacher administered "short form" of the Alpern-Boll Developmental Profile should be treated as a comparable measure for the parent administered Alpern-Boll for those instances where it was necessary to substitute the teacher "short form" for the parent report data.

## TABLE B.4: PRETEST AND POSTTEST VARIANCES FOR THE ALPERN-BOLL LONG AND SHORT FORM SUBSTUDY SAMPLES

| Alpern-Boll | Pretest | | Posttest | |
|---|---|---|---|---|
| | Standard Deviation | Mean (Months) | Standard Deviation | Mean (Months) |
| Alpern-Boll Parent Form | | | | |
| Physical Age | 23.6 | 51.9 | 24.7 | 56.9 |
| Self Help Age | 20.8 | 60.8 | 22.7 | 65.1 |
| Social Age | 17.6 | 56.5 | 21.2 | 58.7 |
| Academic Age | 16.1 | 45.9 | 19.4 | 58.8 |
| Communication Age | 18.8 | 45.7 | 22.3 | 50.6 |
| IQ Equivalency | 28.4 | 82.1 | 30.4 | 85.3 |
| Alpern-Boll Teacher "Short Form" | | | | |
| Physical Age | 18.9 | 47.3 | 19.6 | 51.4 |
| Self Help Age | 19.3 | 54.5 | 19.1 | 54.0 |
| Social Age | 16.9 | 50.7 | 20.3 | 51.2 |
| Academic Age | 16.8 | 40.5 | 20.6 | 48.1 |
| Communication Age | 16.7 | 40.8 | 19.2 | 45.6 |
| IQ Equivalency | 28.3 | 72.1 | 30.8 | 78.8 |
| | N=122 | | N=137 | |

# APPENDIX C

## Technical Memorandum #3

## EXCLUSION CRITERIA FOR OUTLIERS

# TECHNICAL MEMORANDUM NO. 3

## EXCLUSION CRITERIA FOR OUTLIERS

The primary analytic strategy of the Evaluation of Mainstreaming Handicapped Children in Project Head Start Final Report relies on the convention of least squares linear equations. Beta weights generated from multiple regression are used to formulate each equation. However, as with any correlation-based technique, a few extreme scores on any one variable which are not comparably extreme on the other variable can cause correlations to rapidly lose power (in terms of explained variance). To the extent that the two measures are not clearly associated at all points of measurement, for example at the extremes, then the lower correlation coefficients fairly accurately provide a measure of association for the scales. This might happen, for example, where one scale has an inordinately low ceiling so that it is not possible for comparably extreme scores to be present. However, to the extent that the two measures have good independent reliabilities, a full range of scales, and appear comparable in most respects (such as with test-retest reliability) then extreme scores on one scale which are not comparably represented on the other scale can probably be attributed to measurement error.

There are several sources of measurement error which can be identified with this study:

1. Different interviewers.
2. Different respondents (in almost all cases the respondent was the mother, although occasionally the father or grandparent had to serve as the respondent).
3. Use of parallel form (the teacher "short form" was used with 52 cases for whom the required developmental data could not otherwise be obtained).
4. Situational variables affecting the respondent's performance differentially during the interviews.
5. Clerical or mathematical errors (age calculations and six scale conversions for 850 + cases repeated for pretest and posttest.

## ANALYTIC PROCEDURE: ESTABLISHMENT OF CONFIDENCE INTERVALS

Confidence intervals can be used to establish ranges of legitimate values for analysis purposes. The range can vary depending upon the general approach (conservative identification of effects vs. a more liberal trend analysis), and the standard selected for determining the interval (reliability, standard deviation, mean differences, etc.). A review of the analysis purposes and sources of error most likely to effect analysis for this study reveals that extreme differences in pretest scores and posttest scores are most likely outliers due to measurement error, since the presence of more than 1% of extreme gains or losses are virtually impossible. Therefore, confidence intervals can be used to eliminate extreme outliers, which are the most likely large sources of error.

The following approach was used to establish confidence intervals on which to base the exclusion of outliers for the multiple regression equations. These multiple regressions are used to develop equations to predict posttest scores in the absence of a treatment effect. It is crucial, therefore to control for as much measurement error as possible in order to best estimate post test scores.

Reliability data on the Alpern-Boll reports that 90% of the sample on a test-retest reliability study with different interviewers, resulted in paired developmental ages within the following ranges:

| | |
|---|---|
| Physical Scale | 7.4 months |
| Self Help Scale | 7.5 months |
| Social Scale | 5.0 months |
| Academic Scale | 2.8 months |
| Communication Scale | 2.6 months |

This indicates that on the Physical Scale, for example, an initial error range of approximately 16 months could exist given the worst case of measurement error and assuming no change in pretest and posttest true scores. In other words, if the pretest score was overassessed the maximum amount of 8[1] months and then the posttest score was underassessed the maximum amount of 8 months, a 16 month loss has been identified, all of which is attributable to measurement error.

The lower limit of the confidence interval for reliably identifying change is therefore established by rounding decimals upward and doubling the reported 90% reliability range:

Confidence Interval Lower Limit

| | |
|---|---|
| Physical Scale | -16 |
| Self Help Scale | -16 |
| Social Scale | -10 |
| Academic Scale | -6 |
| Communication Scale | -6 |

The approach to establishing the upper limit, however, requires considering developmental growth attributable both to the 6 month interim and to additive program effects. Therefore, in addition to the doubled reliability range, a month for month development attributable to the 6 month interval must be added as well as some suitable estimate of maximum legitimate program effects. For purposes of establishing a conservative but reasonable estimate of the maximum additive program effect 12 months was selected. The upper threshhold of the confidence interval therefore is calculated by doubling the reliability range (after rounding upward), adding 6 months for development and adding another 12 months to represent maximum additive program effects.

The confidence interval for each scale is:

Confidence Interval

| | | | |
|---|---|---|---|
| Physical Scale | -16 | to | +34 |
| Self Help Scale | -16 | to | +34 |
| Social Scale | -10 | to | +34 |

---

[1] Although the actual computation produced 7.4 months, the confidence interval must be in terms of whole months and upward rounding is the most conservative approach to exclusion.

## Confidence Interval

| | |
|---|---|
| Academic Scale | -6 to +24 |
| Communication Scale | -6 to +24 |

This interval represents the maximum amount of pretest-posttest change which can occur and still be considered within a reasonable and expected range. In other words, should a pre-post gain of greater than 34 months (or a loss of more than 16 months) occur on the Physical Scale, there is a high probability that the change is entirely or largely attributable to measure error. Such cases which exceed the confidence interval will be excluded from certain analyses.

To the extent that this exclusion of outliers procedure is conservative, then any identifiable effects can be more confidently interpreted. There is some slight risk of excluding legitimate data. The communication or speech impaired children would probably serve as the most at-risk category, since second language acquisition or remediation of emotional or developmental language delays can produce dramatic "changes" from pretest to posttest.

Tables C.1, C.2 and C.3 show the proportion of speech impaired children by severity, ethnicity and sex, respectively, for the excluded and non-excluded cases on the communication subscale of the Alpern-Boll. Slightly more boys were excluded for both programs. Tables C.4, C.5, and C.6 show the same information for physically handicapped children cases on the physical age subscale of the Alpern-Boll. None of the non-Head Start or non-served children were excluded, and the proportion of Head Start children excluded is comparable to the proportion retained by severity level and differs only slightly by ethnic category or sex. For example, proportionately fewer whites (25%) and more Hispanics (37.5%) were excluded and proportionately

## TABLE C.1: DISTRIBUTION OF SPEECH IMPAIRED CASES EXCEEDING CONFIDENCE INTERVAL LIMITS ON THE COMMUNICATION SUBSCALE OF THE ALPERN-BOLL BY PROGRAM TYPE

| Severity Level | Head Start (N=115) |  | Non-Head Start (N=52) |  | Non-Served (N=50) |  |
|---|---|---|---|---|---|---|
|  | Within Limits % of Column | Outside of Limits % of Column | Within Limits % of Column | Outside of Limits % of Column | Within Limits % of Column | Outside of Limits % of Column |
| Total | 100.0<br>(N=93) | 100.0<br>(N=22) | 100.0<br>(N=44) | 100.0<br>(N=8) | 100.0<br>(N=46) | 100.0<br>(N=4) |
| Mild | 45.2<br>(N=42) | 59.1<br>(N=13) | 40.9<br>(N=18) | 37.5<br>(N=3) | 60.9<br>(N=28) | 100.0<br>(N=4) |
| Moderate | 37.6<br>(N=35) | 18.2<br>(N=4) | 43.2<br>(N=19) | 50.0<br>(N=4) | 28.3<br>(N=13) | * |
| Severe | 14.0<br>(N=13) | 18.2<br>(N=4) | 15.9<br>(N=7) | 12.5<br>(N=1) | 8.7<br>(N=4) | * |
| Profound | 3.2<br>(N=3) | 4.5<br>(N=1) | * | * | 2.2<br>(N=1) | * |

## TABLE C.2: DISTRIBUTION OF SPEECH IMPAIRED CASES EXCEEDING CONFIDENCE INTERVAL LIMITS ON THE COMMUNICATION SUBSCALE OF THE ALPERN-BOLL BY PROGRAM TYPE

| Ethnicity | Head Start (N=109) | | Non-Head Start (N=50) | |
|---|---|---|---|---|
| | Within Limits % of Column | Outside of Limits % of Column | Within Limits % of Column | Outside of Limits % of Column |
| Total | 100.0<br>(N=89) | 100.0<br>(N=20) | 100.0<br>(N=42) | 100.0<br>(N=8) |
| American Indian or Alaskan Native | 6.7<br>(N=6) | * | * | * |
| Asian or Pacific Islander | * | * | 2.4<br>(N=1) | * |
| Black (not of Hispanic Origin) | 36.0<br>(N=32) | 35.0<br>(N=7) | 23.8<br>(N=10) | 12.5<br>(N=1) |
| Hispanic | 14.6<br>(N=13) | 10.0<br>(N=2) | 4.8<br>(N=2) | 25.0<br>(N=2) |
| White | 42.7<br>(N=38) | 55.0<br>(N=11) | 69.0<br>(N=29) | 62.5<br>(N=5) |

## TABLE C.3: DISTRIBUTION OF SPEECH IMPAIRED CASES EXCEEDING CONFIDENCE INTERVAL LIMITS ON THE COMMUNICATION SUBSCALE OF THE ALPERN-BOLL BY PROGRAM TYPE

| Sex | Head Start (N=115) | | Non-Head Start (N=52) | |
|---|---|---|---|---|
| | Within Limits % of Column | Outside of Limits % of Column | Within Limits % of Column | Outside of Limits % of Column |
| Total | 100.0<br>(N=93) | 100.0<br>(N=22) | 100.0<br>(N=44) | 100.0<br>(N=8) |
| Boys | 69.9<br>(N=65) | 86.4<br>(N=19) | 65.9<br>(N=29) | 87.5<br>(N=7) |
| Girls | 30.1<br>(N=28) | 13.6<br>(N=3) | 34.1<br>(N=15) | 12.5<br>(N=1) |

## TABLE C.4: DISTRIBUTION OF PHYSICALLY HANDICAPPED CASES EXCEEDING CONFIDENCE INTERVAL LIMITS ON THE PHYSICAL DEVELOPMENT SCALE OF THE ALPERN-BOLL BY PROGRAM TYPE

| Severity Level | Head Start (N=71) | | Non-Head Start (N=56) | | Non-Served (N=18) | |
|---|---|---|---|---|---|---|
| | Within Limits % of Column | Outside of Limits % of Column | Within Limits % of Column | Outside of Limits % of Column | Within Limits % of Column | Outside of Limits % of Column |
| Total | 100.0<br>(N=63) | 100.0<br>(N=8) | 100.0<br>(N=56) | 100.0<br>(N=0) | 100.0<br>(N=18) | 100.0<br>(N=0) |
| Mild | 31.7<br>(N=20) | 37.5<br>(N=3) | 12.5<br>(N=7) | * | 33.3<br>(N=6) | * |
| Moderate | 41.3<br>(N=26) | 37.5<br>(N=3) | 25.0<br>(N=14) | * | 27.8<br>(N=5) | * |
| Severe | 23.8<br>(N=15) | 25.0<br>(N=2) | 39.3<br>(N=22) | * | 27.8<br>(N=5) | * |
| Profound | 3.2<br>(N=2) | * | 23.2<br>(N=13) | * | 11.1<br>(N=2) | * |

## TABLE C.5: DISTRIBUTION OF PHYSICALLY HANDICAPPED CASES EXCEEDING CONFIDENCE INTERVAL LIMITS ON THE PHYSICAL DEVELOPMENT SCALE OF THE ALPERN-BOLL BY PROGRAM TYPE

| Ethnicity | Head Start (N=69) | | Non-Head Start (N=53) | |
|---|---|---|---|---|
| | Within Limits % of Column | Outside of Limits % of Column | Within Limits % of Column | Outside of Limits % of Column |
| Total | 100.0<br>(N=61) | 100.0<br>(N=8) | 100.0<br>(N=53) | 100.0<br>(N=0) |
| American Indian or Alaskan Native | * | * | * | * |
| Asian or Pacific Islander | 1.6<br>(N=1) | * | * | * |
| Black (not of Hispanic origin) | 31.1<br>(N=19) | 37.5<br>(N=3) | 9.4<br>(N=5) | * |
| Hispanic | 8.2<br>(N=5) | 37.5<br>(N=3) | 7.5<br>(N=4) | * |
| White | 59.0<br>(N=36) | 25.0<br>(N=44) | 83.0<br>(N=44) | * |

TABLE C.6: DISTRIBUTION OF PHYSICALLY HANDICAPPED CASES EXCEEDING CONFIDENCE INTERVAL LIMITS ON THE PHYSICAL DEVELOPMENT SCALE OF THE ALPERN-BOLL BY PROGRAM TYPE

| | Head Start (N=91) | | Non-Head Start (N=56) | |
|---|---|---|---|---|
| Sex | Within Limits % of Column | Outside of Limits % of Column | Within Limits % of Column | Outside of Limits % of Column |
| Total | 100.0<br>(N=63) | 100.0<br>(N=8) | 100.0<br>(N=56) | 100.0<br>(N=0) |
| Boys | 60.3<br>(N=38) | 37.5<br>(N=3) | 57.1<br>(N=32) | * |
| Girls | 39.7<br>(N=25) | 62.5<br>(N=5) | 42.9<br>(N=24) | * |

more girls (62.5%). The sample size of the excluded group (N=8) is so small, however, that it is doubtful that it significantly affects the analysis except to improve homogeneity of regression for between-groups comparisons.

# APPENDIX D

## Technical Memorandum #4

## RELIABILITY OF THE PRESCOTT-SRI CHILD OBSERVATION SYSTEM

# TECHNICAL MEMORANDUM NO. 4

## RELIABILITY OF THE PRESCOTT-SRI CHILD OBSERVATION SYSTEM

The Prescott-SRI is an unusually complex and comprehensive observation instrument. Observer training required an intensive 7 to 10 day training session with a trainer/trainee ratio of 1/6. These sessions included familiarization with the coding system, practice recording a child's behavior in preschool classrooms and day care centers, coding practice with video-tapes especially developed for the system, and frequent reliability checks made throughout the training process. The final criterion for certification in the Prescott-SRI was a three-hour exercise in which trainees coded videotaped sequences of children's behavior. Trainees were required to meet the .75 trainer/trainee reliability level in order to be qualified to collect observation data using this system.

Despite the strict .75 reliability standard for all trainees, there was some possibility that this reliability did not remain constant. As observers collected data in the field there was little continuous pressure to code behaviors consistent with the training standard. Often there was no second opinion available for validation of an observer's coding in difficult or ambiguous situations. In addition, some codes are more difficult to code consistently than others, and some codes occur with such low frequency that there is little opportunity for observers to practice these, and thus maintain their coding proficiency in these codes.

One result of decreased reliability would be the tendency for observers to lapse into more general codes about which there is little question. However, these codes do not provide as sensitive a description of the child's behavior as is possible with this system.

The present evaluation required both detailed information and good reliability. Since children's pretest behaviors are to be compared with their posttest behaviors, it is crucial that reliability be maintained consistently across observers. Poor reliability could dramatically affect the pretest-posttest frequencies of codes by handicapping conditions. For example, if observers were instructed to pay particular attention to behaviors which are difficult to code and which do not occur frequently, they might inadvertently code more low frequency behaviors than would be expected. This kind of situation contributes to collecting idiosyncratic data which are particularly problematic in pre/post comparisons. Therefore, determination of reliability is necessary.

## ANALYTICAL PROCEDURE: RELIABILITY SUBSTUDY USING PAIRED OBSERVATIONS

Reliability for the Prescott-SRI was determined at three separate levels, each corresponding to a level of analysis.

- frame by frame correspondence for two observers
- total frequency of occurrence for selected codes
- congruence of constructs assessed

The Prescott-SRI Observation System requires coding a specific child's (focus child) behavior every 12 seconds during two separate 20-minute observation periods. The coding of child behaviors on the Prescott-SRI occurs across three dimensions of behavior:

1. child activity codes
2. object of the child's attention
3. activity continuity.

1. The child activity codes contain four broad areas, each of which is considered as a continuum of possible categories. The four areas are:

- I - Integrates: Codes in this category were used to record active involvement with tasks or social situations. The target child accomplished this by continuing activities, structuring a task, studying a problem, or acting creatively.

- T - Thrusts/Initiates: codes in this category were used to record behavior initiated by the focus child, for example, selecting an activity; asking for comfort, reassurance, or recognition; asking questions; giving information; or stating preference.
- R - Receives: Codes in this category were used to record inputs to the child and his/her reaction to inputs for which a response was expected. Inputs included statements of information, questions about facts, invitations to relate to others.
- D - Defends, Responds: Codes in this category reflected avoiding or ignoring, crying, anger, defending rights, and asserting ownership.

Within the continuum of possible categories for these four areas, there are 54 child activity codes (shown in Table D.1). Most of the child codes can be further specified in terms of the object of the focus child's attention (object code) and an index of continuity for the focus child's activity (continuity code). For example, if the focus child continues the activity of stringing beads, this would be coded "I2c-E-O." The "I2c" child code identifies bead stringing as a closed, structured activity. The "E" refers to the focus of the child's attention (in this case the beads) which is designated as the "environment." The code "O" indicates that the child's activity is ongoing because in this situation there is continuity to the bead stringing behavior.

2. The object of a focus child's attention is designed by separate codes:

- A - an adult;
- C - another child;
- G - a group of children with or without adults;
- D - a handicapped child or group of children including one or more handicapped children;[1]
- E - environment.

3. Activity continuity is a final area in which the continuous nature of a child's behavior was examined. Activity continuity referred to whether the focus child was involved in an activity

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[1] Modified for this evaluation effort by Applied Management Sciences, Inc.

## TABLE D.1: DESCRIPTION OF CHILD ACTIVITY CODES

CHILD OBSERVATION SYSTEM
CODE DISPLAY SHEET

| INTEGRATES | THRUSTS/INITIATES | RECEIVES | DEFENDS/RESPONDS |
|---|---|---|---|
| I1 Monitors environment (looks, watches). Child's attention must be on something other than what he is doing; never instruct discussion unless it is very evident child is not paying attention. | T1a Does nothing, wanders T2a-E-NA just wandering; T2a-A-O teacher imposed waiting<br>T1b Moves with purpose | R1 Receives orders or minor behavioral corrections w/o an explanation; Task or social order Requires immediate response | 1 No response |
| I2a Maintains passive-attention activity Only focus child listening to story, record<br>I2b Maintains open-ended, expressive activity-dancing alone<br>I2c Maintains closed, structured activity games w/rules; teacher directed; snack, clean-up, reading to self | T2a Selects activity alone<br>T2b Selects activity with others; suggests new o. different activity; asks to join. Goes w/group to activity; asks others or goes w/others to new activity other children present | R2 Receives request/offer to play or share; help-must be verbal Child wants to share w/F.C. F.C. must receive verbal request to play for R2--otherwise its R7b (neutral) don't guess | 2 Avoids, withdraws Movement may be voluntary or involuntary |
| I3a Asks for assistance, help with task; tries but can't; info on the task, i.e., where to put this block?<br>I3b Quits activity after difficulty Gives up<br>I3c Reacts with anger to difficulty | T3a Asks for information, help before task begins<br>T3b Asks for permission to share materials, asks for turn | R3 Receives information/help--task facilitation; what T says; can happen anywhere in task; T sets up agenda for activity-can happen any where in task; way of making activity clearer; feedback; usually from A | 3 Cries, whines (D3) |
| I4a Considers, contemplates, tinkers, studies, examines<br>I4b Adds a different prop or new idea; must be different from previous frame<br>I4c Sees pattern, gives structure; solves problem first time; solves a problem; first time discovery must verbalize | T4 Gives opinions, preferences, information, comments; non-task? task ?'s volunteers info; verbal friendly training<br>T4ng Threats, name calling, no phys. | R4 Receives general comments, questions; not on task; verbal playful teasing<br>R4ng receives demeaning comments, name calling, sarcasm | 4 Refuses to comply (D4) |
| I5a Offers sympathy, comfort first time it happens; must be distress evident-N<br>I5b Shares, helps, offers affection other child does not have to be in distress; invites to join | T5a Asks for comfort, reassurance N-follows NA<br>T5b Asks for attention, recognition; expresses pride - usually verbal boastful; must be clear; voice, physical stance-compares | R5a Receives comfort, affection N<br>R5b Receives praise - praise related to task on proper or social beh. Thank you | 5 Defends rights, asserts ownership (D5) |
| I6a Participates in group activity--passive attention Sesame Street<br>I6b Participates in group activity--open, expressive<br>I6c Participates in group activity--closed, structured, eating snack w/others; clean-up; discussion; puzzle table | T6a States rules; tattles - center or social rules<br>T6b Gives orders or directs others in task | R6a Receives rules, corrections with explanation<br>R6b Receives threats, discipline restraint; adult discipline; threats from C.<br>R6b-N Receives physical punishment | 6 Hostilely asserts rights; anger (D6)<br>Really upset - frantic, angry |
| I7-Ng Participates in hostile exchange. Mutual - N<br>I7 Participates in equal playful exchanges. Focus on quality of joy being experienced-N-simultaneous | T7a Intrudes unintentially, imply physical things happening<br>T7b Intrudes playfully, neutral; physical<br>T7b-Ng Intrudes hostilely-physical | R7a Receives unintentional intrusion or disruption<br>R7b Receives playful intrusion, neutral-fire drill<br>R7b-N Receives hostile intrusion<br>R7b, T7b if occur twice, on third frame code R7bNg, T7bNg | 7 Active, appropriate response |
|  |  | R8a Receives rejection, refusal (sad)<br>R8b Experiences accident from environment<br>R8b-E-NA-3<br>D3-E-NA (second frame) |  |

| | |
|---|---|
| AS | Attends to self |
| TT | Temper tantrum |
| NC | Not clear |
| OL | Other language |
| RP | Role play |
| Ng | Negative |

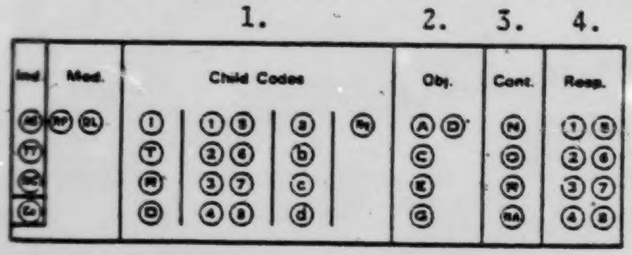
I5a
R5a
I7
I7-Ng

N in continuity

No D1, D2 or D7
D3 from unknown intrusion
D3 → 6

designated as new or ongoing, or whether the child was returning to a previous activity, or was not involved in any activity at all. In addition, for some of the "Receives" (R) codes it was possible to record the focus child's response to the stimuli. For example, if another child asks the focus child if s/he would like a cracker and the focus child says, "no, thank you," the activity would be coded "$R_2$-C-O-7." The "$R_2$" indicates that the focus child received an offer to share and the "C" designates that this offer was from another child. If this has happened during snack time the "O" could refer to the fact that snack was an ongoing activity. The "7" identifies "no, thank you" as an active and appropriate response to the offer.

These three behavior dimensions are represented in the recording booklet as illustrated in the recording frame below:



1. = Child Activity Codes
2. = Object Codes
3. = Continuity codes

The final column (4) is for the recording of the specific child response, if applicable. For standardized recording observers were provided with a beeper timed at 12 second intervals to signify recording points. All materials were provided by SRI International.

In summary, every 12 seconds, child activity data were coded by frame in the Prescott-SRI scoring booklet. Each frame included:

- child activity code
- object code
- continuity code
- response code, if applicable.

In order to determine the reliability of the Prescott-SRI a substudy of 50 paired observers was created to ascertain interrater reliability, and a comparison of certain pretest-posttest constructs was conducted to determine construct reliability.

## Interobserver Reliability

### *FRAME-BY-FRAME RELIABILITY*

For each 20-minute observation period observers coded approximately 100 frames of child behavior. Two 20-minute periods were required for each child included in the study sample. The Prescott-SRI provided 54 different child activity codes, 5 object codes, 4 continuity codes, and 4 response codes which were utilized in recording the focus child's activities and interactions within the program environment. There are a large number of possible permutations of these child behavior codes (over 2,000 valid combinations). Determining reliability on a frame-by-frame basis requires matching each 12-second observation to verify that each pair of observations correspond exactly for all possible coding dimensions. The percentage of matched frames for this frame-by-frame analysis is shown in Table D.2.

For this sample of 50 paired observations, the first 75 valid[1] frames from each of the two 20-minute observation sessions produced a total of 6,996 frames for comparison purposes. As previously stipulated, the training criterion required 75 percent agreement between trainees and the scoring standard for child codes only (not including object and continuity codes). This was achieved in a controlled situation using video-taped child behavior scenes. Under field conditions and across 20 observers, the correspondence between paired observations for child codes (only) was 81.9 percent -- exceeding the training criterion by almost 7 percent. The addition of continuity codes only drops the percent correspondence to 78.5 while the addition of object codes only drops the percent correspondence to

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[1] Frames not cancelled by observers.

TABLE D.2: FRAME BY FRAME RELIABILITY PERCENTAGES FOR ALL POSSIBLE SRI FRAMES

| Prescott-SRI Code | Paired Observations | |
|---|---|---|
| | Matching<br>% of Total Valid Frames | Non-Matching<br>% of Total Valid Frames |
| Child Codes Only | 81.92<br>(N=5731) | 18.08<br>(N=1265) |
| Child Codes with Continuity Codes | 78.52<br>(N=5493) | 21.48<br>(N=1503) |
| Child Codes with Object Codes | 71.83<br>(N=5025) | 28.17<br>(N-1971) |
| Child Codes with all Possible Code Combinations | 66.35<br>(N=4642) | 33.65<br>(N=2354) |

Total valid frames for this sample of fifty paired observations = 6996 frames.

71.8 percent. The percent correspondence of paired observations for all possible codeable elements of the entire frame is 66.4 percent--an exceptionally high matching rate considering that the total possible number of combinations exceeds 2,000.

*RELIABILITY OF SELECTED CODE FREQUENCIES*

Although there are over 2,000 possible valid code combinations, most of these codes occur with such a low frequency that they do not provide stable measures. Some effort to reduce the number of possible codes was required. The first step in the process of identifying key codes to be retained in order to reduce the large quantity of codes was to review the frequency distribution for all possible code combinations. These combinations included all child activity, continuity, and object codes which were recorded for each child in the sample. If the rate of occurrence of any child behavior code was 100 or greater, that particular code was retained for the next reduction step. Child behavior codes with frequency counts of less than 100 were eliminated from consideration for the following reasons: (1) low frequencies were not sensitive to change; and (2) inclusion of low frequencies of child behavior codes could cause the data to be especially vulnerable to any systemic (such as observer-specific) bias which might exist.

A total of 87 child behavior codes occurred with a frequency of 100 or more times. These 87 behavior codes were further examined by handicapping condition because it was felt that low incidence handicaps may be represented by behavior codes with relatively low frequencies (between 500 and 100 total frequency count). In examining the frequency of child behavior codes by handicapping condition three primary criteria were considered for retaining a child behavior code:

1. A high frequency of occurrence of the child behavior code (codes appearing 1,000 times or more).
2. Evidence that the rate of occurrence of the behavior code varied by handicapping condition.
3. Evidence that the frequency of a given behavior or that differences between handicapped groups was conceptually logical.

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These are not mutually exclusive criteria. If only one of the criteria was met, or if there seemed to be a logical explanation (why blind children exhibited a specific behavior more frequently than children with other kinds of handicapping conditions, for example) then the child behavior code could still be selected for further analysis. Since blind and deaf children were less likely than other handicapped children to be involved in group activities where passive attention was demonstrated (listening to a story being read to a group, or listening to a record or tape), several behavior codes for these low incidence groups were in fact retained.

After application of these procedures and criteria, a total of 47 child activity and object codes were retained. These behavior codes either occurred with sufficient frequency, showed differences in frequencies by handicapping conditions, or were consistent with the general body of knowledge about behaviors of children with specific handicapping conditions. The interobserver reliability correlations for the 50 paired observers for these selected codes are shown in Table D.3. Table D.4 presents the pretest and posttest frequencies for these 47 selected child activity and object codes.

The Pearson product-moment correlations for the sample of 50 paired observations show only six correlations below .69. Three of these child codes occur with such a low total frequency for all SRI observations for the total sample, that it is likely the frequency for the reliability sample itself is not stable.

|  |  | Total Frequency for the Entire SRI Sample |  |
|---|---|---|---|
|  |  | Pretest | Posttest |
| R7BC5 | r = .47 | 224 | 176 |
| R7BC7 | r = .52 | 172 | 139 |
| Continuity Code R | r = .0008 | 379 | 409 |

These three frames were initially selected because, although their frequency was low, there was evidence of differential frequency by handicapping condition. Continuity Code R does not, however, appear to be an adequately stable measure for analysis purposes. While the reliabilities of these six SRI codes appear to be low, only Continuity

TABLE D.3: RELIABILITY CORRELATIONS OF SELECTED PRESCOTT-SRI FRAMES

| SRI FRAME | Pearson Product-Moment Correlation Coefficients for Paired Observations |
|---|---|
| I1 A | .33 |
| I1 C | .69 |
| I1 E | .98 |
| I1 G | .70 |
| I1 D | .95 |
| I2B E | .99 |
| I2C E | .88 |
| I4A E | .75 |
| I4B E | .81 |
| I6A A | .98 |
| I6A E | .96 |
| I6B A | * |
| I6B C | .76 |
| I6B E | .98 |
| I6B D | **1.00 |
| I6C A | .17 |
| I6C C | .12 |
| I6C E | .90 |
| I6C G | .91 |
| I6C D | .97 |
| T1A E | .89 |
| T4 A | .93 |
| T4 C | .89 |
| T4 D | .96 |
| T7B C | .84 |
| T7B E | .94 |
| R3 A | .76 |
| R3 A3 | * |
| R3 A7 | .74 |
| R5B A | .97 |
| R7B C | .93 |
| R7B C5 | .47 |
| R7B C7 | .52 |
| INDC1 | 1.00 |
| MODROLE PLAY | .99 |
| CHLDCODE I | .91 |
| CHLDCODE T | .96 |
| CHLDCODE R | .92 |
| OBJECT A | .88 |
| OBJECT C | .77 |
| OBJECT E | .87 |
| OBJECT G | .92 |
| OBJECT D | .98 |
| CONTINUITY N | .75 |
| CONTINUITY O | .85 |
| CONTINUITY R | .0008 |
| CONTINUITY A | .77 |

N=50

*Total observed frequency for these frames was less than three, and one paired observer reported no observations.

**Total observed frequency for this frame = 0; there were no observations for this code by either paired observer for this reliability subsample.

## TABLE D.4: FREQUENCY OF OBSERVATION FOR THE 47 SELECTED PRESCOTT-SRI VALID FRAMES FOR THE HANDICAPPED SAMPLE

| SRI Frame | Pretest Frequency | | Posttest Frequency | |
|---|---|---|---|---|
| | Head Start | Non-Head Start | Head Start | Non-Head Start |
| I1A | 1143 | 797 | 821 | 547 |
| I1C | 1344 | 258 | 783 | 198 |
| I1E | 2414 | 2643 | 2512 | 2141 |
| I1G | 1162 | 306 | 825 | 242 |
| I1D | 282 | 977 | 155 | 828 |
| I2E | 1798 | 1785 | 1042 | 1415 |
| I2CE | 1855 | 2205 | 1363 | 1350 |
| I4AE | 643 | 590 | 273 | 270 |
| I4BE | 1610 | 963 | 2939 | 2552 |
| I6AA | 903 | 352 | 720 | 327 |
| I6AE | 645 | 469 | 1189 | 429 |
| I6BA | 129 | 314 | 84 | 112 |
| I6BC | 466 | 54 | 284 | 93 |
| I6BE | 3954 | 1533 | 3268 | 2184 |
| I6BD | 64 | 414 | 25 | 319 |
| I6CA | 3802 | 2711 | 1117 | 1244 |
| I6CC | 971 | 104 | 896 | 226 |
| I6CE | 10738 | 7064 | 12100 | 6522 |
| I6CG | 699 | 507 | 979 | 937 |
| I6CD | 131 | 1522 | 391 | 877 |
| T1AE | 1163 | 1209 | 684 | 676 |
| T4A | 1638 | 1479 | 1185 | 1356 |
| T4C | 1237 | 206 | 1584 | 357 |
| T4D | 152 | 316 | 146 | 451 |
| T7BC | 502 | 71 | 456 | 77 |
| T7BE | 86 | 66 | 121 | 96 |
| R3A | 3682 | 4627 | 3082 | 4025 |
| R3A3 | 17 | 116 | 11 | 30 |
| R3A7 | 2483 | 3666 | 1846 | 2781 |
| R5BA | 352 | 688 | 317 | 630 |
| R7BC | 161 | 35 | 221 | 43 |
| R7BC5 | 125 | 8 | 78 | 14 |
| R7BC7 | 77 | 12 | 80 | 9 |
| INC1 | 79 | 880 | 6 | 379 |
| MODROLE PLAYING | 1108 | 593 | 608 | 391 |
| CHLDCODE I | 35956 | 26446 | 32383 | 24087 |
| CHLDCODE T | 10608 | 7471 | 9156 | 6718 |
| CHLDCODE R | 12218 | 14235 | 10492 | 12349 |
| OBJECT A | 20818 | 21215 | 13978 | 16878 |
| OBJECT C | 7318 | 1114 | 6562 | 1483 |
| OBJECT E | 27087 | 20659 | 28009 | 19731 |
| OBJECT G | 2648 | 1031 | 2592 | 1645 |
| OBJECT D | 968 | 4522 | 933 | 3506 |
| CONTINUITY N | 2141 | 2103 | 1536 | 1406 |
| CONTINUITY O | 52846 | 42955 | 48133 | 39496 |
| CONTINUITY R | 166 | 138 | 143 | 130 |
| CONTINUITY A | 3568 | 3221 | 2169 | 2148 |
| | N=428 | N=352 | N=391 | N=322 |

Code R has both a low frequency and an extremely low correlation (r = .0008) and should be considered for elimination from the Prescott-SRI analysis efforts. The other two low frequency codes (R7B C5 and R7B C7) have reliability correlations which, while low, are still considered adequate. It should be noted that eight other low frequency codes (shown below) achieved reliability coefficients of .75 or better:

| | | Total Frequency for the Entire SRI Sample | |
|---|---|---|---|
| | | Pretest | Posttest |
| I4A E | r = .75 | 1,544 | 791 |
| I6B C | r = .76 | 780 | 675 |
| I6B D | r = 1.00 | 532 | 377 |
| T4 D | r = .98 | 512 | 661 |
| T7B C | r = .85 | 826 | 829 |
| T7B E | r = .94 | 191 | 314 |
| R7B C | r = .93 | 258 | 429 |
| INDC1 | r = 1.00 | 1,262 | 396 |

The other three child codes with reliability coefficients below .69 occur with fairly high frequency although I1 A varies greatly from pretest to posttest and poor reliability for this code may suggest some difficulty in consistently observing the behavior, especially across observers.

| | | Total Frequency for the Entire SRI Sample | |
|---|---|---|---|
| | | Pretest | Posttest |
| I1 A | r = .33 | 2,297 | 1,490 |
| I6C A | r = .17 | 8,076 | 3,089 |
| I6C C | r = .12 | 1,648 | 1,513 |

One of these three codes was identified during pretest analysis of the SRI data as contributing significantly to the discriminant function and to the factor analysis: I6C C. Since this code appears with almost equal pretest and posttest frequency and is related to differences by program, it may be desirable to retain this code for the pre-post analysis and eliminate the other two. In this way the low reliability of a single code (I6C C) will not adversely affect the overall reliability of the Prescott-SRI.

## Construct Congruence

The pretest Prescott-SRI data analysis included two general construct analysis efforts: discriminant analysis to examine pretest differences by program type, and factor analysis to assist in further reducing the number of SRI codes for analysis. To the extent that the posttest Prescott-SRI data identify similar general constructs, then the suitability of the Prescott-SRI data for this level of analysis is strengthened. It is not the intent to duplicate the pretest findings since the Prescott-SRI also serves as a secondary dependent variable and some program effects may be present to account for differences.

### *DISCRIMINANT FUNCTION*

An important difference in the programs which has already been partially discussed is the mainstream nature of the Head Start programs compared with the more restrictive "special education" emphasis of the non-Head Start programs. The non-Head Start classrooms are comprised predominately of handicapped children and there is little opportunity for child-to-child interactions of a mainstream nature in these programs. Because the Prescott-SRI contains codes for observing the frequency of interaction between handicapped and non-handicapped children, and because the availability of non-handicapped children differs so strongly (Head Start programs have many more non-handicapped children available), there was reason to believe that the child interaction frequencies for some codes would vary substantially and that this may be a relatively consistent construct throughout the study.

To examine this possibility a discriminant analysis was conducted on both the pretest and the posttest data using the 47 selected codes and the seven summary codes. The purpose was to examine the ability of the data to consistently differentiate between Head Start and non-Head Start programs. The results of this analysis are presented in Table D.5 and show that the pretest discriminant function

TABLE D.5: PREDICTED PROGRAM MEMBERSHIP FOR BOTH PRETEST AND POSTTEST DISCRIMINANT FUNCTIONS FOR THE SELECTED 47 PRESCOTT-SRI FRAMES

| Actual Program Type | Predicted Program Type | | | |
|---|---|---|---|---|
| | Head Start | | non-Head Start | |
| | Pre-test | Post-test | Pre-test | Post-test |
| Head Start | 90.0<br>(N = 334) | 86.0<br>(N = 319) | 10.0<br>(N = 37) | 14.0<br>(N = 52) |
| Non-Head Start | 17.5<br>(N = 54) | 14.6<br>(N = 45) | 82.5<br>(N = 255) | 85.4<br>(N = 264) |

| Total Correctly Predicted | | Canonical Correlation | Explained Variance |
|---|---|---|---|
| Pretest | 86.6% | .73 | 53.29% |
| Posttest | 85.7% | .72 | 51.84% |

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predicts membership in program type with 86.6 percent[1] accuracy, and that the posttest discriminant function predicted with 85.7 percent accuracy. The pretest discriminant function reduced Wilks' Lambda to .4614 and the posttest discriminant reduced Lambda to .4880 indicating very good discriminating power. The pretest canonical correlation of $r = .73$ is very high and is comparable to the posttest correlation of $r = .72$. The 13 child code variables identified by both the pretest and posttest discriminate functions are summarized in Table D.6. For purposes of clarity only the summary codes are reported as mean ratings; the object and child codes are reported as mean scores to show the differences between programs.

### *FACTOR ANALYSIS*

Canonical factor analysis with varimax rotations (to maximize the identification of variance related to the entire set of selected Prescott-SRI codes) was conducted separately on the pretest data and the posttest data. The pretest factor analysis identified 18 factors, the first five of which accounted for 65 percent of the variance. The posttest factor analysis also identified 18 factors, the first five of which accounted for 75 percent of the variance.

Only the first two factors from each analysis proved to be stable factors from pretest to posttest. Tables D.7 and D.8 present the factor loadings for the relevant Prescott-SRI codes for these two factors. These two factors account for 38 percent of the pretest variance and 44 percent of the posttest variance. The excellent stability of the factor loadings on these Prescott-SRI codes from pretest to posttest lends support to the construct reliability of the Prescott-SRI.

Further, it enables the Prescott-SRI to be reduced to the factor scores of these two factors for purposes of between and within groups analysis.

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[1] Corrected for unequal prior probability of group membership.

TABLE D.6: KEY PRESCOTT-SRI FRAMES INCLUDED IN BOTH PRETEST AND POSTTEST DISCRIMINANT FUNCTIONS

| Frame | Description | FUNCTION COEFFICIENTS | | | | | |
|---|---|---|---|---|---|---|---|
| | | Head Start | | | Non-Head Start | | |
| | | Pretest | Posttest | Mean Change | Pretest | Posttest | Mean Change |
| Summary Code 2 | Extent of participation and involvement (1 = low; 5 = high) | 3.435 | 3.756 | 0.321 | 3.541 | 3.576 | 0.035 |
| Summary Code 5 | Affect (1 = distressed; 5 = happy) | 2.848 | 3.500 | 0.652 | 3.942 | 3.536 | -0.406 |
| Summary Code 7 | Involvement with other children (1 = avoids; 5 = seeks out involvement) | 1.538 | 3.251 | 1.713 | 1.618 | 3.065 | 1.447 |
| Summary Code 8 | Involvement with handicapped children (1 = avoids; 5 = seeks out involvement) | 1.159 | 2.873 | 1.714 | 2.152 | 4.691 | 2.539 |
| Object Code A | Summation of all frames in which the focus child's attention was directed at an adult | 0.243 | 0.316 | 0.073 | 0.817 | 1.181 | 0.364 |
| Object Code C | Summation of all frames in which the focus child's attention was directed at another child | -0.141 | 0.219 | 0.360 | -1.074 | -1.136 | -0.[illegible] |
| Object Code D | Summation of all frames in which the focus child's attention was directed at a handicapped child or a group including a handicapped child | 0.027 | -0.047 | -0.074 | 1.770 | 0.877 | -0.893 |
| Individual Code 1 | Child attends to self - withdraws completely | -0.081 | 0.022 | 0.103 | 0.112 | 6.495 | 6.383 |
| I1 x G | Child's attention is directed at a group without handicapped children | 0.368 | 0.037 | -0.331 | -0.198 | -0.374 | -0.176 |
| 16B x C | Child participates in an open-ended group activity with attention directed at another child | -0.066 | -0.050 | 0.016 | -0.357 | -0.189 | 0.168 |
| 16C x D | Child participates in a closed, structured group activity with attention directed at a handicapped child or group including a handicapped child | -0.075 | -0.066 | 0.009 | 1.773 | 0.189 | -1.584 |
| 16C x E | Child participates in a closed structured group activity with attention directed at some object | -0.104 | 0.164 | 0.268 | -0.319 | -0.344 | -0.025 |
| R 7 B x C 7 | Child receives a playful intrusion from another child and responds actively and appropriately | -0.191 | 0.099 | 0.290 | -0.345 | -0.281 | 0.064 |

TABLE D.7: PRESCOTT-SRI VARIABLES SELECTED BY FACTOR ANALYSIS: FACTOR 1

| SRI Variable | Factor (1) Loadings | | Activity Code Description |
|---|---|---|---|
| | Pre-test | Post-test | |
| 16C E | -0.412 | -0.489 | Child participates in closed structured group activity with attention directed at some object. |
| R3 A | 0.892 | 0.741 | Summation of all codes where child receives attention or help from an adult. |
| R3 A7 | 0.208 | 0.782 | Child receives information or help with a task from an adult and responds actively and appropriately. |
| R5B A | 0.467 | 0.541 | Child receives praise from an adult. |
| Child Code I | -0.604 | -0.808 | Summation of all child codes which are used to describe active involvement in interactions or tasks. |
| Child Code R | 0.899 | 0.941 | Summation of all child codes used to describe inputs received. |
| Object Code A | 0.717 | 0.811 | Summation of all frames in which the focus child's attention was directed at an adult. |
| Object Code E | -0.478 | -0.645 | Summation of all frames in which focus child's attention was directed at some object. |
| Summary Code 3 | 0.164 | 0.294 | Dominance and Submissiveness rating. |

Factor Description: Receiving Interaction (Attention and Assistance) from an Adult vs. Object Oriented Activity.

TABLE D.8: SRI VARIABLES SELECTED BY FACTOR ANALYSIS: FACTOR 2

| SRI Variable | Factor (2) Loadings Pre-test | Post-test | Activity Code Description |
|---|---|---|---|
| 11 C | 0.479 | 0.489 | Child's attention directed at another child. |
| 16B C | 0.288 | 0.413 | Child participates in open-ended group activity with attention directed at another child. |
| 16C C | 0.658 | 0.566 | Child participates in closed structured group activity with attention directed at another child. |
| T4 C | 0.681 | 0.412 | Child initiates general statements with another child. |
| T7B C | 0.467 | 0.483 | Child initiates playful, exuberant behavior directed at another child. |
| R7B C | 0.214 | 0.370 | Child receives a playful intrusion from another child. |
| R7B C5 | 0.211 | 0.343 | Child receives a playful intrusion from another child and responds by defending or asserting rights. |
| Object Code C | 0.941 | 0.856 | Summation of all frames in which the focus child's attention was directed at another child. |
| Child Code T | 0.299 | 0.219 | Summation of all child codes used to describe initiating behavior. |
| Summary Code 8 | -0.257 | -0.425 | Extent of involvement with handicapped children. |

Factor Description: Initiated Postive Activity and Attention to Another Child.

## RECOMMENDATIONS:

Overall, the analysis of the Prescott-SRI data shows the instrument to be reliable, both from the concern for interobserver reliability and for congruence of construct measurement over time, and also sensitive to differential program characteristics. For between groups analyses the Prescott-SRI data should be collapsed into factor scores for the two stable factors which were identified (receiving interaction from an adult and initiated activity to another child). Within-groups analysis should also use the factor scores for the Prescott-SRI data but should also include comparative analysis of the Z scores for the 47 selected frames.

# APPENDIX E

## Technical Memorandum #5

## PRESCOTT-SRI Z-SCORE TRANSFORMATION

# TECHNICAL MEMORANDUM NO. 5

## PRESCOTT-SRI Z-SCORE TRANSFORMATION

This observation system is used to record the nature and kind of activities and social interactions in which children engage within the preschool environment. The Prescott-SRI is being used both as a secondary dependent variable to show the effects of program treatments on certain child behaviors, and also as an independent variable to show the extent to which certain child behaviors can affect growth and development (as measured by the Alpern-Boll). In addition to the concern for the reliability of the Prescott-SRI. both on an interrater basis and in terms of general measurement constructs, there is a need to convert the basic frequency data to a metric more applicable to regression analysis.

### ANALYTICAL PROCEDURE: SUBSAMPLE OF NON-HANDICAPPED CHILDREN

In addition to the child code observation data which were collected on the handicapped Head Start and non-Head Start samples, identical observation data were collected on a sample of non-handicapped children. The purpose of these data was to provide a reference group for the frequency counts of each behavior and also to enable the development of an interval measure. These data were considered as a normative frame of reference for rates of child behaviors exhibited by non-handicapped ("normal") children. In addition this "normative" sample was used to create standardized scores.

Comparability: Because the child observation data collected by this instrument are a frequency count for specific coded behaviors, the data are only meaningful relative to the frequency counts for the same behavior code by other children. The transformation of these data to standardized scores also allows the data to more easily accommodate the analysis requirements. In order to insure comparability of the frequency counts (across behavior codes, and across other variables as well as other children), the frequency counts were transformed into standardized (Z) scores. Each frequency score was transformed using the formula for a standardized score:

$$Z = \frac{X-\overline{X}}{\sigma} = \frac{\text{Frequency Score - Mean Frequency}}{\text{Standard Deviation}}$$

Because the study population represents a restricted range in at least one known assessment area, it is highly probable that some of the behaviors being observed for by the Prescott-SRI represent areas where the range restriction issue would be a problem. However, to avoid the range restriction problem with these data, and also in order to reference the "frequency counts" to some standard, the Z score transformation was conducted with data from a sample of non-handicapped children. The mean and standard deviation of each selected observation code from the non-handicapped sample were used to transform the frequency count for each handicapped child into a standardized Z score. The modified equation is:

$$\underset{\text{(for specific behavior code)}}{Z} = \frac{\underset{\text{(for Handicapped Child)}}{\text{Frequency Count}} - \underset{\text{(for non-handicapped sample)}}{\text{Mean Frequency}}}{\underset{\text{(for the non-handicapped sample)}}{\text{Standard Deviation}}}$$

Table E.1 shows the mean and standard deviation for the non-handicapped samples (both pretest and posttest). To insure that the non-handicapped sample most closely approximated the full range of frequency counts for every selected observation code, a small sample of handicapped children were randomly selected from both the pretest and posttest data by handicapping condition in proportion to the incidence of that handicapping condition in the general population (6 speech impaired, 4 mentally retarded, 1 visually impaired, for example). The non-handicapped sample data were recollected for

## TABLE E.1: SELECTED SRI VALID FRAMES FOR THE NON-HANDICAPPED SAMPLE

| SRI FRAME | Mean Frequency | | Standard Deviation | |
|---|---|---|---|---|
| | Pre | Post | Pre | Post |
| I1A | 1.66 | 1.60 | 2.69 | 2.35 |
| I1C | 2.06 | 1.89 | 3.31 | 2.69 |
| I1E | 4.04 | 6.28 | 5.11 | 6.71 |
| I1G | 1.55 | 2.09 | 3.39 | 3.50 |
| I1D | 0.34 | 0.38 | 1.07 | 2.06 |
| I2BE | 3.75 | 2.55 | 8.95 | 6.10 |
| I2CE | 4.70 | 2.74 | 9.46 | 6.81 |
| I4AE | 1.42 | 0.89 | 2.80 | 1.99 |
| I4BE | 6.37 | 8.78 | 8.28 | 6.88 |
| I6AA | 3.09 | 1.13 | 8.35 | 4.56 |
| I6AE | 2.52 | 1.65 | 8.48 | 7.28 |
| I6BC | 1.23 | 0.93 | 2.99 | 3.31 |
| I6BE | 10.47 | 13.66 | 14.29 | 17.80 |
| I6BD | 0.25 | 0.17 | 1.51 | 1.47 |
| I6CA | 7.27 | 2.47 | 10.90 | 5.56 |
| I6CC | 2.47 | 1.29 | 5.37 | 3.75 |
| I6CE | 27.18 | 28.76 | 21.58 | 23.37 |
| I6CG | 1.74 | 3.99 | 4.57 | 12.83 |
| I6CD | 0.45 | 1.50 | 2.17 | 6.83 |
| T1AE | 3.18 | 2.14 | 6.56 | 3.45 |
| T4A | 4.37 | 3.33 | 3.83 | 4.19 |
| T4C | 3.77 | 6.41 | 4.86 | 5.80 |
| T4D | 0.27 | 0.29 | 1.09 | 1.12 |
| T7BC | 1.24 | 1.03 | 2.09 | 1.57 |
| T7BE | 0.19 | 0.29 | 0.78 | 0.93 |
| R3A | 6.39 | 6.72 | 6.88 | 8.98 |
| R3A3 | 0.12 | 0.01 | 1.73 | 0.06 |
| R3A7 | 6.53 | 3.87 | 6.38 | 5.16 |
| R5BA | 0.71 | 0.44 | 1.58 | 1.09 |
| R7BC | 0.31 | 0.56 | 0.78 | 1.24 |
| R7BC5 | 0.37 | 0.29 | 0.81 | 0.73 |
| R7BC7 | 0.35 | 0.17 | 0.90 | 0.49 |
| INDC1 | 1.26 | 0.01 | 13.39 | 0.19 |
| MODROLE PLAYING | 4.88 | 4.02 | 14.31 | 11.76 |
| CHLD CODE I | 85.73 | 85.98 | 19.86 | 19.54 |
| CHLD CODE T | 27.25 | 29.09 | 14.03 | 12.96 |
| CHLD CODE R | 26.27 | 24.27 | 13.29 | 14.36 |
| OBJECT A | 43.45 | 31.45 | 22.34 | 19.37 |
| OBJECT C | 19.00 | 20.62 | 14.81 | 13.93 |
| OBJECT E | 69.43 | 75.24 | 26.79 | 26.16 |
| OBJECT G | 5.22 | 9.19 | 3.38 | 15.50 |
| OBJECT D | 2.24 | 2.96 | 5.91 | 9.41 |
| CONTINUITY N | 5.11 | 4.00 | 3.46 | 3.36 |
| CONTINUITY O | 126.12 | 130.23 | 14.79 | 12.72 |
| CONTINUITY R | 0.33 | 0.53 | 0.74 | 1.00 |
| CONTINUITY A | 7.51 | 4.49 | 10.65 | 8.07 |
| | N=243 | N=257 | | |

posttest analysis in order to provide a control for developmental effects during the six month pre-post interim.

This transformation of the data provides a standardized score for each observation code which reflects the performance of the handicapped child in reference to the non-handicapped sample and also allows for comparability across behavior codes and other key variables such as handicapping condition. Tables E.2 and E.3 present the mean standardized Z scores (pretest and posttest) by program type for all of the key object-continuity codes and for the key child activity codes respectively (47 all total). Table E.4 presents the mean ratings for the 7 summary codes. These three tables illustrate differences in mean frequencies for these behavior codes. To the extent that mean frequencies are different from zero they also provide a referent with respect to the non-handicapped population. A superficial review shows that child behavior codes for the non-Head Start programs more often have large pretest and posttest differences from zero than do Head Start programs (40 codes compared with 7, respectively, for the pretest and 38 compared with 9 for the posttest data). In general, this indicates that the frequency of these behaviors for handicapped children in Head Start more nearly approximates the frequency of occurrence for non-handicapped children than does the frequency of occurrence for children in non-Head Start programs. In other words, the Head Start handicapped children are more like the non-handicapped sample (with respect to these 47 identified variables) than are the non-Head Start sample.

Three dimensions were evident within the Prescott-SRI child behavior codes that were identified by the discriminant functions as differentiating between types of programs. These dimensions are:

- class composition (child/teacher ratio and handicapped to non-handicapped ratio),
- classroom activity structure (open, closed),
- social integration of handicapped children (mainstreaming).

## TABLE E.2: Z* SCORES FOR PRESCOTT-SRI OBJECT AND CONTINUITY CODE VARIABLES

| PRESCOTT-SRI CODE | CHILD ACTIVITY CODE DESCRIPTIONS | HEAD START | | NON-HEAD START | |
|---|---|---|---|---|---|
| | | Pretest | Posttest | Pretest | Posttest |
| OBJA | Summation of all frames in which the focus child's attention was directed at an adult | 0.243 | 0.316 | 0.817 | 1.181 |
| OBJC | Summation of all frames in which the focus child's attention was directed at another child | -0.141 | 0.219 | -1.074 | -1.136 |
| OBJE | Summation of all frames in which focus child's attention was directed at some object | -0.253 | 0.006 | -0.435 | -0.453 |
| OBJG | Summation of all frames in which focus child's attention was directed at a group | 0.140 | -0.145 | -0.306 | -0.249 |
| OBJD | Summation of all frames in which focus child's attention was directed at a handicapped child or group including a handicapped child | 0.027 | -0.047 | 1.770 | 0.877 |
| CONTINN | Summation of all frames in which the focus child engaged in a new activity | -0.057 | 0.035 | 0.219 | 0.156 |
| CONTINO | Summation of all frames in which the focus child continued involvement in activity or interaction | -0.173 | -0.065 | -0.202 | -0.257 |
| CONTINNA | Summation of all frames in which the focus child is not involved in a specific task or activity | 0.044 | 0.168 | 0.099 | 0.304 |
| CONTINNR | Summation of all frames in which the focus child continued involvement in a specific task after a brief interruption | -0.673 | -0.156 | -0.669 | -0.114 |

## TABLE E.3: Z* SCORES FOR CHILD ACTIVITY CODE VARIABLES

| PRESCOTT-SRI CODE | CHILD ACTIVITY CODE DESCRIPTIONS | HEAD START | | NON-HEAD START | |
|---|---|---|---|---|---|
| | | Pretest | Posttest | Pretest | Posttest |
| I1 A | Child's attention directed at an adult | 0.375 | -0.042 | 0.226 | 0.070 |
| I1 C | Child's attention directed at another child | 0.314 | 0.077 | -0.400 | -0.466 |
| I1 E | Child's attention is directed at something in the environment | 315 | 0.072 | 0.645 | 0.093 |
| I1 G | Child's attention is directed at a group without handicapped children | 0.368 | 0.037 | -0.198 | -0.374 |
| I1 D | Child's attention is directed at a handicapped child or group including one or more handicapped children | 0.333 | 0.026 | 2.334 | 1.109 |
| I2b E | Child maintains open-ended, expressive activity with focus of attention on some object | 0.063 | 0.043 | 0.111 | 0.333 |
| I2c E | Child maintains structured closed activity involving some object | -0.047 | 0.138 | 0.189 | 0.237 |
| I4a E | Child considers, contemplates, tinkers with some object | 0.017 | -0.079 | 0.078 | -0.007 |
| I4b E | Child adds a different prop or new idea | -0.297 | -0.129 | -0.459 | -0.078 |
| I6a A | Child participates with passive attention in a group activity with an adult as the focus of his/her attention | -0.130 | 0.177 | -0.251 | -0.016 |
| I6a | Child participates with passive attention in a group activity with some object as the focus of his/her attention | -0.129 | 0.214 | -0.148 | -0.036 |
| I6b A ** | Child participates in open-ended group activity with attention directed at an adult | 3.103 | 0.244 | 0.961 | 0.811 |
| I6b C | Child participates in open-ended group activity with attention directed at another child | -0.066 | -0.050 | -0.357 | -0.189 |
| I6b E ** | Child participates in open-ended group activities with attention directed at some object | -0.111 | -0.274 | -0.434 | -0.370 |

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TABLE E.3: (Continued)

| PRESCOTT-SRI CODE | CHILD ACTIVITY CODE DESCRIPTIONS | HEAD START | | NON-HEAD START | |
|---|---|---|---|---|---|
| | | Pretest | Posttest | Pretest | Posttest |
| I6b D | Child participates in expressive, open-ended group activity with attention directed toward a handicapped child or group including a handicapped child | -0.069 | -0.071 | 0.569 | 0.588 |
| I6c A | Child participates in closed structured groups activity with attention directed at an adult | 0.190 | 0.094 | 0.072 | 0.287 |
| I6c C | Child participates in closed structured group activity with attention directed at another child | -0.304 | 0.299 | -0.399 | -0.149 |
| I6c E ** | Child participates in closed structured group activity with attention directed at some object | -0.104 | 0.164 | -0.319 | -0.344 |
| I6c G | Child participates in closed structured group activity with attention directed at the group | -0.017 | -0.108 | -0.067 | -0.075 |
| I6c D | Child participates in closed structured group activity with attention directed at a handicapped child or group including a handicapped child | -0.075 | -0.066 | 1.773 | 0.189 |
| T1a E | Child wanders with no apparent purpose with attention directed at some object | -0.091 | -0.085 | 0.009 | 0.012 |
| T4 A | Child initiates statements about his/her preferences, likes, dislikes with an adult | -0.156 | -0.035 | -0.054 | 0.239 |
| T4 C | Child initiates general statements with another child | -0.184 | -0.374 | -0.059 | -0.906 |
| T4 D ** | Child initiates general statements with a handicapped child or group including a handicapped child | 0.123 | 0.088 | 0.562 | 0.937 |
| T7b C | Child initiates playful, exuberant behavior directed at another child | -0.046 | 0.123 | -0.501 | -0.487 |
| T7b E | Child initiates playful, exuberant behavior directed at some object | 0.043 | 0.029 | -0.028 | 0.016 |
| R3 A | Child receives information or help with a task from an adult | 0.328 | 0.173 | 1.077 | 0.696 |
| R3 A3 | Child receives information or help with a task from an adult and is crying or whining | -0.045 | 0.311 | 0.141 | 1.501 |

TABLE E.3: (Continued)

| PRESCOTT-SRI CODE | CHILD ACTIVITY CODE DESCRIPTIONS | HEAD START |  | NON-HEAD START |  |
|---|---|---|---|---|---|
|  |  | Pretest | Posttest | Pretest | Posttest |
| R3 A7 ** | Child receives information or help with a task from an adult and responds actively and appropriately | -0.131 | 0.212 | 0.674 | 0.990 |
| R5b A | Child receives praise from an adult | 0.061 | 0.375 | 0.829 | 1.452 |
| R7b C | Child receives a playful intrusion from another child | 0.089 | 0.027 | -0.270 | -0.339 |
| R7b C5 ** | Child receives a playful intrusion from another child and responds by defending or asserting rights | -0.105 | -0.113 | -0.428 | -0.339 |
| R7b C7 | Child receives a playful intrusion from another child and responds actively and appropriately | -0.191 | 0.099 | -0.345 | -0.281 |
| INDCNT1 | Child attends to self - withdraws completely | -0.081 | 0.022 | 0.112 | 6.495 |
| MODRP | Child assumes he/she is in an imaginary role | -0.179 | -0.203 | -0.242 | -0.235 |
| CHLDCDI | Summation of all child codes which are used to describe active involvement in interactions or tasks | -0.086 | 0.059 | -0.513 | -0.440 |
| CHLDCDT | Summation of all child codes used to describe initiating behavior | -0.086 | -0.349 | -0.467 | -0.583 |
| CHLDCDR ** | Summation of all child codes used to describe inputs received | 0.154 | 0.271 | 1.157 | 1.084 |

*Frequency counts for each variables were transformed to standardized scores for ease of comparability.

This transformation was conducted using distribution data (mean, standard deviation) from the sample of normal children (N=219) plus a proportionate sample of handicapped children (N=24, total N=243).

**Key variables identified by the discriminant analysis.

## TABLE E.4

## MEAN RATING FOR PRESCOTT-SRI SUMMARY CODES

| No. | Summary Code | Description of Rating | Head Start pre-test | Head Start post-test | non-Head Start pre-test | non-Head Start post-test |
|---|---|---|---|---|---|---|
| 2 | Participation & Involvement | 1 = uninvolved; 5 = highly involved | 3.435 | 3.756 | 3.541 | 3.576 |
| 3 | Dominance & Submissiveness | 1 = submissive; 5 = dominating | 2.515 | 3.585 | 2.759 | 4.154 |
| 4 | Level of Interaction with Adults | 1 = avoids adults; 5 = seeks adults out | 3.051 | 3.119 | 3.254 | 3.149 |
| 5 | Affect | 1 = distressed; 5 = happy | 2.848 | 3.500 | 3.942 | 3.536 |
| 6 | Hostility | 1 = none; 3 = frequent | 0.566 | 1.129 | 0.594 | 1.068 |
| 7 | Involvement with Other Children | 1 = avoids children; 5 = seeks out other children | 1.538 | 3.251 | 1.618 | 3.065 |
| 8 | Involvement with Handicapped Children | 1 = avoids handicapped children; 5 = seeks out handicapped children | 1.159 | 2.873 | 2.152 | 4.691 |

These three dimensions are interrelated and it is not possible to explain the frequency of specific child behaviors strictly in terms of any one of these dimensions. However, in some cases, a child's behavior appears to be more related to one dimension than the other two. For example, some handicapped children in Head Start programs are less frequently involved in open-ended, expressive group activities with their attention directed toward adults. A possible explanation could be attributed to Head Start class composition which includes fewer adults than non-Head Start programs. In the case where Head Start handicapped children are less often involved in interactions with other handicapped children, it would be explained by the ratio of handicapped to non-handicapped children which in most Head Start programs is much lower than in non-Head Start programs. Similarly, in non-Head Start programs there is a higher frequency for handicapped children to interact with handicapped peers, since the classroom composition usually reflects only handicapped peers.

When child behavior codes are examined in terms of the dimension of social integration for handicapped children, several child behavior codes seemed reflective of this construct. Head Start handicapped children are more often involved in structured group activities with objects as the focus of their attention than are handicapped children in non-Head Start programs. The data indicate the frequency of group involvement for Head Start handicapped children more closely approximates the mean for the "normal" sample (the Z scores are very close to zero). Head Start handicapped children may indeed be more like normal children than different; however, this raises the issue of how severely impaired the Head Start handicapped children are in the first place. On the other hand, this finding could support the premise of mainstreaming and the positive impact upon handicapped children gained by their social integration with normal peers.

The finding that Head Start handicapped children received more playful intrusions from non-handicapped peers than those focus children in non-Head Start programs is possibly indicative of social integration being achieved by handicapped children. It could also be explained, at least partially, by the fact that Head Start programs have many more non-handicapped peers available. In general, few, if any, non-handicapped children were integrated within the non-Head Start programs.

The frequency of occurrence of both structured group activities and open-ended activities was more similar to the non-handicapped sample (Z scores are very close to zero) for Head Start children. Non-Head Start children on the other hand had substantially fewer occurrences of both behavior codes. The question of how such activity structure affects the behaviors of children is not always clear. However, in Head Start classes there appears to be more opportunity for children to be self-directed and to initiate activities and interactions in a less rigidly structured, teacher-controlled environment. In classes where there is more teacher directed activity, the dimension of child control over the environment and his or her own reactions to and behaviors within it, are subject to more defined parameters. The nature and number of open-ended (expressive) vs. closed or structured activities available for children to become involved in is possibly determined by whether the program structure itself is open or closed. This availability of opportunity in turn affects the behaviors children exhibit in the preschool environment. Head Start programs, as a group, appear to have a greater range of open-closed activities compared with non-Head Start programs which simply have fewer of both kinds. These differences generally hold across pretest and posttest data.

# APPENDIX F

## Comparison of Set-Wise Regression Models For Different Treatments of Alpern-Boll Subscale Outliers

TABLE F.1: COMPARISON OF HIERARCHICAL SET-WISE REGRESSION MODELS: POSTTEST PHYSICAL AGE FOR THE SPEECH IMPAIRED

| | Outliers Removed | Unadjusted Outliers Included | Adjusted Outliers Included |
|---|---|---|---|
| Set 1 (Covariates) | $R^2$= .7210 | $R^2$= .5314 | $R^2$= .5104 |
| Set 2 (Group) | $R^2$= .7375 | $R^2$= .5588 | $R^2$= .5280 |
| | $R^2$ Change = .0165 | $R^2$ Change = .0274 | $R^2$ Change= .176 |
| | F= 5.881** | F= 6.334** | F= 3.805* |
| Set 3 (Interaction 1+2) | $R^2$= .7661 | $R^2$= .6008 | $R^2$= .5807 |
| | $R^2$ Change = .0286 | $R^2$ Change = .0420 | $R^2$ Change = .0527 |
| | F= 1.299 | F= 1.230 | F= 1.469 |

*Significant at the .05 level.

**Significant at the .01 level.

## TABLE F.2: COMPARISON OF HIERARCHICAL SET-WISE REGRESSION MODELS: POSTTEST SELF HELP AGE FOR THE SPEECH IMPAIRED

|  | Outliers Removed | Unadjusted Outliers Included | Adjusted Outliers Included |
|---|---|---|---|
| Set 1<br>(Covariates) | $R^2$= .7514 | $R^2$= .5604 | $R^2$= .5500 |
| Set 2<br>(Group) | $R^2$= .7636<br>$R^2$ Change = .0122<br>F= 4.654* | $R^2$= .5827<br>$R^2$ Change =.0223<br>F= 5.448** | $R^2$= .5658<br>$R^2$ Change .0158<br>F= 3.714 |
| Set 3<br>(Interaction 1+2) | $R^2$= .7895<br>$R^2$ Change= .0259<br>F= 1.374 | $R^2$= .6368<br>$R^2$ Change=.0541<br>F= 1.74* | $R^2$= .6184<br>$R^2$ Change= .0526<br>F= 1.611 |

*Significant at the .05 level.

**Significant at the .01 level.

## TABLE F.3: COMPARISON OF HIERARCHICAL SET-WISE REGRESSION MODELS: POSTTEST SOCIAL AGE FOR THE SPEECH IMPAIRED

| | Outliers Removed | Unadjusted Outliers Included | Adjusted Outliers Included |
|---|---|---|---|
| Set 1 | $R^2$ = .6987 | $R^2$ = .5050 | $R^2$ = .4255 |
| (Covariates) | | | |
| Set 2 | $R^2$ = .7059 | $R^2$ = .5241 | $R^2$ = .4444 |
| (Group) | $R^2$ Change = .0072 | $R^2$ Change = .0191 | $R^2$ Change = .0189 |
| | F= 2.142 | F= 3.612* | F= 1.926 |
| Set 3 | $R^2$ = .7425 | $R^2$ = .5817 | $R^2$ = .5138 |
| (Interaction 1+2) | $R^2$ Change = .0366 | $R^2$ Change = .0576 | $R^2$ Change = .0694 |
| | F= 1.393 | F= 1.609 | F= 1.668 |

*Significant at the .05 level.

**Significant at the .01 level.

## TABLE F.4: COMPARISON OF HIERARCHICAL SET-WISE REGRESSION MODELS: POSTTEST ACADEMIC AGE FOR THE SPEECH IMPAIRED

| | | Outliers Removed | Unadjusted Outliers Included | Adjusted Outliers Included |
|---|---|---|---|---|
| Set 1 (Covariates) | $R^2=$ | .7047 | .6231 | .5897 |
| Set 2 (Group) | $R^2=$ | .7183 | .6323 | .5962 |
| | $R^2$ Change = | .0136 | .0092 | .0065 |
| | F= | 4.702 | 2.550 | 1.644 |
| Set 3 (Interaction 1+2) | $R^2=$ | .7440 | .6680 | .6374 |
| | $R^2$ Change = | .0257 | .0357 | .0412 |
| | F= | 1.117 | 1.25 | 1.328 |

*Significant at the .05 level.

**Significant at the .01 level.

## TABLE F.5: COMPARISON OF HIERARCHICAL SET-WISE REGRESSION MODELS: POSTTEST COMMUNICATION AGE FOR THE SPEECH IMPAIRED

| | Outliers Removed | Unadjusted Outliers Included | Adjusted Outliers Included |
|---|---|---|---|
| Set 1<br>(Covariates) | $R^2$= .7990 | $R^2$= .5609 | $R^2$= .5759 |
| Set 2<br>(Group) | $R^2$= .8077<br>$R^2$ Change = .0087<br>F= 3.83* | $R^2$= .5763<br>$R^2$ Change = .0154<br>F= 3.708* | $R^2$= .5959<br>$R^2$ Change .0200<br>F= 5.049** |
| Set 3<br>(Interaction 1+2) | $R^2$= .8214<br>$R^2$ Change = .0137<br>F= .735 | $R^2$= .6004<br>$R^2$ Change = .0241<br>F= .705 | $R^2$= .6232<br>$R^2$ Change = .0273<br>F= .847 |

*Significant at the .05 level.

**Significant at the .01 level.

TABLE F.6: COMPARISON OF HIERARCHICAL SET-WISE REGRESSION MODELS: POSTTEST PHYSICAL AGE FOR THE PHYSICALLY IMPAIRED

| | Outliers Removed | Unadjusted Outliers Included | Adjusted Outliers Included |
|---|---|---|---|
| Set 1 (Covariates) | $R^2 = .8360$ | $R^2 = .7644$ | $R^2 = .7458$ |
| Set 2 (Group) | $R^2 = .8414$ | $R^2 = .7714$ | $R^2 = .7529$ |
| | $R^2$ Change = .0054 | $R^2$ Change = .0071 | $R^2$ Change = .0070 |
| | F = 2.284 | F = 2.051 | F = 1.87 |
| Set 3 (Interaction 1+2) | $R^2 = .8821$ | $R^2 = .8044$ | $R^2 = .7892$ |
| | $R^2$ Change = .0407 | $R^2$ Change = .033 | $R^2$ Change = .036 |
| | F = 1.628 | F = 1.213 | F = 1.324 |

*Significant at the .05 level.

**Significant at the .01 level.

TABLE F.7: COMPARISON OF HIERARCHICAL SET-WISE REGRESSION MODELS: POSTTEST SELF HELP AGE FOR THE PHYSICALLY HANDICAPPED

| | Outliers Removed | Unadjusted Outliers Included | Adjusted Outliers Included |
|---|---|---|---|
| Set 1 (Covariates) | $R^2$= .8185 | $R^2$= .7391 | $R^2$= .7176 |
| Set 2 (Group) | $R^2$= .8310 | $R^2$= .7499 | $R^2$= .7296 |
| | $R^2$ Change = .0125 | $R^2$ Change = .0108 | $R^2$ Change = .0120 |
| | F = 4.438* | F = 2.850 | F = 2.929 |
| Set 3 (Interaction 1+2) | $R^2$= .8475 | $R^2$= .7757 | $R^2$= .7612 |
| | $R^2$ Change = .0165 | $R^2$ Change = .0258 | $R^2$ Change .0316 |
| | F = .697 | F = .827 | F = .951 |

* Significant at the .05 level.

** Significant at the .01 level.

## TABLE F.8: COMPARISON OF HIERARCHICAL SET-WISE REGRESSION MODELS: POSTTEST SOCIAL AGE FOR THE PHYSICALLY HANDICAPPED

| | Outliers Removed | Unadjusted Outliers Included | Adjusted Outliers Included |
|---|---|---|---|
| Set 1 (Covariates) | $R^2$= .7969 | $R^2$= .6627 | $R^2$= .6104 |
| Set 2 (Group) | $R^2$= .7971 | $R^2$= .6667 | $R^2$= .6144 |
| | $R^2$ Change = .0002 | $R^2$ Change = .004 | $R^2$ Change = .0040 |
| | F = .0023 | F = .781 | F = .685 |
| Set 3 (Interaction 1+2) | $R^2$= .8255 | $R^2$= .7011 | $R^2$= .6615 |
| | $R^2$ Change = .0284 | $R^2$ Change = .0344 | $R^2$ Change .0471 |
| | F = 1.315 | F = .827 | F = 1.0 |

* Significant at the .05 level.

** Significant at the .01 level.

## TABLE F.9: COMPARISON OF HIERARCHICAL SET-WISE REGRESSION MODELS: POSTTEST ACADEMIC AGE FOR THE PHYSICALLY HANDICAPPED

| | Outliers Removed | Unadjusted Outliers Included | Adjusted Outliers Included |
|---|---|---|---|
| Set 1 (Covariates) | $R^2 = .81471$ | $R^2 = .7643$ | $R^2 = .7594$ |
| Set 2 (Group) | $R^2 = .81478$ | $R^2 = .7659$ | $R^2 = .7612$ |
| | $R^2$ Change = .024 | $R^2$ Change = .454 | $R^2$ Change = .497 |
| | F = .8483 | F = .8126 | F = .8073 |
| Set 3 (Interaction 1+2) | $R^2 = .8483$ | $R^2 = .8126$ | $R^2 = .8073$ |
| | $R^2$ Change = .03348 | $R^2$ Change = .0467 | $R^2$ Change = .0461 |
| | F = 1.517 | F = 1.792 | F = 1.719 |

* Significant at the .05 level.

** Significant at the .01 level.

## TABLE F.10: COMPARISON OF HIERARCHICAL SET-WISE REGRESSION MODELS: POSTTEST COMMUNICATION AGE FOR THE PHYSICALLY HANDICAPPED

| | | Outliers Removed | Unadjusted Outliers Included | Adjusted Outliers Included |
|---|---|---|---|---|
| Set 1 (Covariates) | | $R^2$= .8779 | $R^2$= .6662 | $R^2$= .5521 |
| Set 2 (Group) | | $R^2$= .8790 | $R^2$= .6716 | $R^2$= .5586 |
| | $R^2$ Change | = .0011 | = .0054 | = .0064 |
| | | F = .431 | F =1.085 | F = .957 |
| Set 3 (Interaction 1+2) | | $R^2$= .9005 | $R^2$=.7274 | $R^2$= .6507 |
| | $R^2$ Change | = .0215 | =.0559 | .0921 |
| | | F = 1.124 | F = 1.474 | F = 1.895 |

* Significant at the .05 level.

** Significant at the .01 level.

## APPENDIX G

## Comparison of Techniques to Estimate Expected Posttest Alpern-Boll Subscale Outcomes Due to Expected Maturation

## TABLE G.1: COMPARISON OF TECHNIQUES TO ESTIMATE EXPECTED POSTTEST ALPERN-BOLL SUBSCALE OUTCOMES DUE TO MATURATION

### Physical Development

| | Children Identified as Physically Handicapped | | Children Identified as Speech Impaired | |
|---|---|---|---|---|
| | $\bar{X}$ | SD | $\bar{X}$ | SD |
| **Pretest Score** | 32.15 | 20.6 | 56.35 | 19.35 |
| **Posttest Score** | 35.63 | 22.76 | 62.16 | 19.79 |

Adjustments for Maturation

| | Children Identified as Physically Handicapped | | Children Identified as Speech Impaired | |
|---|---|---|---|---|
| | $\bar{X}$ | SD | $\bar{X}$ | SD |
| **Method 1** | 35.83 | 22.67 | 62.65 | 20.97 |
| $\Delta$ | -.2 (.818 SE) | | -.5 (.928 SE) | |
| **Method 2** | 36.89 | 15.08 | 61.20 | 11.20 |
| $\Delta$ | -1.26 (1.29 SE) | | .95 (1.13 SE) | |
| **Method 3** | 35.63 | 20.96 | 61.82 | 16.73 |
| $\Delta$ | 0.0 (.758 SE) | | .333 (.76 SE) | |
| **Method 4** | 35.15 | | 62.12 | 19.34 |
| $\Delta$ | .48 (.798 SE) | | .04 (.851 SE) | |

Definitions of each of the four methods can be found in Chapter 9. Method 1 is the historical regression procedure, Method 2 is the least squares predictive procedure, Method 3 is the covariance (residual) procedure, and Method 4 is the control group procedure. Changes ($\Delta$'s) refer to the differences between the actual posttest developmental age and the predicted posttest developmental age ($\bar{X}$ actual - $\bar{X}$ predicted).

## TABLE G.2: COMPARISON OF TECHNIQUES TO ESTIMATE EXPECTED POSTTEST ALPERN-BOLL SUBSCALE OUTCOMES DUE TO MATURATION

### Self Help Skills

| | Children Identified as Physically Handicapped | | Children Identified as Speech Impaired | |
|---|---|---|---|---|
| | $\bar{X}$ | SD | $\bar{X}$ | SD |
| Pretest Score | 42.83 | 23.49 | 61.69 | 19.35 |
| Posttest Score | 49.64 | 26.31 | 68.12 | 18.72 |
| Adjustments for Maturation | | | | |
| Method 1 | 47.77 | 25.92 | 67.42 | 20.12 |
| Δ | 1.87 (1.06 SE) | | .70 (.872 SE) | |
| Method 2 | 47.40 | 19.44 | 67.94 | 12.73 |
| Δ | 2.24 (1.43 SE) | | .172 (1.01 SE) | |
| Method 3 | 49.64 | 23.67 | 68.12 | 16.41 |
| Δ | 0.00 (.99 SE) | | 0.00 (.663 SE) | |
| Method 4 | 47.83 | 23.49 | 69.73 | 19.32 |
| Δ | 1.81 (1.04 SE) | | -1.61 (.76 SE) | |

## TABLE G.3: COMPARISON OF TECHNIQUES TO ESTIMATE EXPECTED POSTTEST ALPERN-BOLL SUBSCALE OUTCOMES DUE TO MATURATION

### Social Skills

| | Children Identified as Physically Handicapped | | Children Identified as Speech Impaired | |
|---|---|---|---|---|
| | $\bar{X}$ | SD | $\bar{X}$ | SD |
| **Pretest Score** | 45.36 | 19.35 | 54.45 | 16.0 |
| **Posttest Score** | 52.77 | 21.68 | 61.77 | 15.7 |
| | Adjustments for Maturation | | | |
| Method 1 | 50.62 | 21.23 | 60.53 | 17.28 |
| $\Delta$ | 2.15 (.991 SE) | | 1.23 (.828 SE) | |
| Method 2 | 51.99 | 15.88 | 58.66 | 10.74 |
| $\Delta$ | .776 (1.34 SE) | | 3.10 (.928 SE) | |
| Method 3 | 52.93 | 19.23 | 61.77 | 12.79 |
| $\Delta$ | -.16 (.91 SE) | | -.001 (.68 SE) | |
| Method 4 | 52.26 | 19.34 | 59.84 | 15.99 |
| $\Delta$ | .51 (.957 SE) | | 1.93 (.75 SE) | |

## TABLE G.4: COMPARISON OF TECHNIQUES TO ESTIMATE EXPECTED POSTTEST ALPERN-BOLL SUBSCALE OUTCOMES DUE TO MATURATION

Academic Skills

| | Children Identified as Physically Handicapped | | Children Identified as Speech Impaired | |
|---|---|---|---|---|
| | $\bar{X}$ | SD | $\bar{X}$ | SD |
| Pretest Score | 41.29 | 17.17 | 46.48 | 14.48 |
| Posttest Score | 47.76 | 19.21 | 54.41 | 15.0 |
| | Adjustments for Maturation | | | |
| Method 1 | 46.07 | 18.83 | 51.68 | 15.62 |
| $\Delta$ | 1.68 (.765 SE) | | 2.75 (.697 SE) | |
| Method 2 | 44.80 | 13.53 | 50.90 | 10.27 |
| $\Delta$ | 3.53 (1.26 SE) | | 3.51 (.787 SE) | |
| Method 3 | 47.76 | 17.38 | 54.42 | 12.29 |
| $\Delta$ | 0.00 (.69 SE) | | -0.001 (.61 SE) | |
| Method 4 | 46.69 | 17.17 | 51.77 | 14.47 |
| $\Delta$ | 1.07 (.74 SE) | | 2.64 (.645) | |

TABLE G.5: COMPARISON OF TECHNIQUES TO ESTIMATE EXPECTED POSTTEST ALPERN-BOLL SUBSCALE OUTCOMES DUE TO MATURATION

Communication Skills

| | Children Identified as Physically Handicapped | | Children Identified as Speech Impaired | |
|---|---|---|---|---|
| | $\bar{X}$ | SD | $\bar{X}$ | SD |
| Pretest Score | 40.87 | 17.46 | 40.97 | 14.85 |
| Posttest Score | 47.42 | 20.64 | 48.91 | 16.06 |
| Adjustments for Maturation | | | | |
| Method 1 | 45.73 | 19.33 | 45.58 | 16.19 |
| Δ | 1.69 (.714 SE) | | 3.33 (.609 SE) | |
| Method 2 | 46.89 | 14.401 | 44.55 | 10.536 |
| Δ | 2.95 (1.09 SE) | | 4.36 (.876 SE) | |
| Method 3 | 48.16 | 19.31 | 48.92 | 14.32 |
| Δ | -.74 (.68 SE) | | -.003 (.55 SE) | |
| Method 4 | 49.27 | 17.458 | 47.14 | 14.87 |
| Δ | -1.85 (.719 SE) | | 1.77 (.572 SE) | |

# APPENDIX H

## Zero-Order Correlation Matrix for the Between-Groups Analysis Covariate Set

## TABLE H.1: ZERO ORDER CORRELATIONS OF BETWEEN GROUP COVARIATE SET

| Variables | Chronological Age | Mother's Education | Family Income | Child's Sex (male) | White | Black | Multiple Handicaps | High/Scope Home Environment Scale | Physical Age | Self-Help Age | Social Age | Academic Age | Communication Age | Severity of Handicap |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Chronological Age at Posttest | 1.00 | | | | | | | | | | | | | |
| Mother's Education | -.022 | 1.00 | | | | | | | | | | | | |
| Family Income | .068 | .428 | 1.00 | | | | | | | | | | | |
| Child's Sex (Male) | .019 | .072 | -.028 | 1.00 | | | | | | | | | | |
| White | -.013 | .098 | .288 | .036 | 1.00 | | | | | | | | | |
| Black | .018 | -.024 | -.23 | -.006 | -.71 | 1.00 | | | | | | | | |
| Multiple Handicaps | -.009 | -.094 | -.132 | -.015 | -.114 | .104 | 1.00 | | | | | | | |
| High/Scope Home Environment Scale | .249 | .196 | .131 | -.040 | .128 | -.053 | -.170 | 1.00 | | | | | | |
| Physical Age | .304 | -.157 | -.141 | .049 | -.119 | .098 | -.312 | .394 | 1.00 | | | | | |
| Self Help Age | .308 | -.149 | -.092 | -.020 | -.039 | .047 | -.314 | .507 | .825 | 1.00 | | | | |
| Social Age | .354 | -.117 | -.107 | -.018 | -.044 | .048 | -.333 | .536 | .731 | .819 | 1.00 | | | |
| Academic Age | .302 | -.092 | -.082 | -.028 | -.008 | .011 | -.321 | .550 | .726 | .769 | .825 | 1.00 | | |
| Communication Age | .334 | -.075 | -.062 | -.044 | -.032 | .053 | -.311 | .538 | .610 | .707 | .788 | .847 | 1.00 | |
| Severity of Handicap | .091 | -.087 | -.117 | -.055 | -.078 | .091 | .29 | -.238 | -.467 | -.494 | -.473 | -.430 | -.424 | 1.00 |

H.1

# APPENDIX I

## Duncan Socio-Economic Index

Housewife 01

| Census Book Code | ISR Code | Occupation | Duncan Socio-Economic Index | Duncan Population Decile | Census Socio-Economic Index |
|---|---|---|---|---|---|
| 000 | 001 | Accountants & auditors | 78 | 9 | 92 |
| 010 | 002 | Actors & actresses | 60 | 8 | 84 |
| 012 | 003 | Airplane pilots & navigators | 79 | 9 | 96 |
| 013 | 004 | Architects | 90 | 9 | 98 |
| 014 | 005 | Artists & art teachers | 67 | 9 | 93 |
| 015 | 006 | Athletes | 52 | 8 | 80 |
| 020 | 007 | Authors | 76 | 9 | 93 |
| 021 | 008 | Chemists | 79 | 9 | 94 |
| 022 | 009 | Chiropractors | 75 | 9 | 89 |
| 023 | 010 | Clergymen | 52 | 8 | 67 |
| 030-060 | 012 | College presidents, prof's, instructors (n.e.c.) | 84 | 9 | 96 |
| 070 | 013 | Dancers & dancing teachers | 45 | 7 | 61 |
| 071 | 014 | Dentists | 96 | 9 | 99 |
| 072 | 015 | Designers | 73 | 9 | 91 |
| 073 | 016 | Dieticians & nutritionists | 39 | 6 | 66 |
| 074 | 017 | Draftsmen | 67 | 9 | 87 |
| 075 | 018 | Editors & reporters | 82 | 9 | 95 |
| | | Engineers, technical | | | |
| 080 | 020 | Aeronautical | 87 | 9 | 97 |
| 081 | 021 | Chemical | 90 | 9 | 98 |
| 082 | 022 | Civil | 84 | 9 | 96 |
| 083 | 023 | Electrical | 84 | 9 | 97 |
| 084 | 024 | Industrial | 86 | 9 | 95 |
| 085 | 025 | Mechanical | 82 | 9 | 96 |
| 090 | 026 | Metallurgical, metal'ts. | 82 | 9 | 97 |
| 091 | 027 | Mining | 85 | 9 | 97 |
| 092-093 | 028 | Not elsewhere classified (Inc. kind not reported) | 87 | 9 | 96 |
| 101 | 029 | Entertainers (n.e.c.) | 31 | 5 | 48 |
| 102 | 030 | Farm & home management advisers | 83 | 9 | 94 |
| 103 | 031 | Foresters & conservationists | 48 | 7 | 78 |
| 104 | 032 | Funeral directors & embalmers | 59 | 8 | 83 |
| 105 | 033 | Lawyers & judges | 93 | 9 | 98 |
| 111 | 034 | Librarians | 60 | 8 | 64 |
| 120 | 035 | Musicians & music teachers | 52 | 8 | 72 |
| 130-145 | 036 | Natural scientists (n.e.c) | 80 | 9 | 95 |
| 150 | 037 | Nurses, professional | 46 | 7 | 71 |
| 151 | 038 | Nurses, student professional | 51 | 8 | 50 |
| 152 | 039 | Optometrists | 79 | 9 | 96 |
| 153 | 040 | Osteopaths | 96 | 9 | 99 |
| 154 | 041 | Personnel & labor-relations workers | 84 | 9 | 96 |
| 160 | 042 | Pharmacists | 82 | 9 | 95 |
| 161 | 043 | Photographers | 50 | 8 | 73 |
| 162 | 044 | Physicians and surgeons | 92 | 9 | 99 |
| 163 | 011 | Public relations men & publicity writers | 82* | 9 | 95 |
| 164 | 045 | Audio operators | 69 | 9 | 90 |
| 165 | 046 | Recreation & group workers | 67 | 9 | 84 |
| 170 | 047 | Religious workers | 56 | 8 | 63 |
| 171 | 048 | Social & welfare workers, | 64 | 8 | 85 |
| 172-175 | 049 | Social scientists | 81 | 9 | 96 |
| 180 | 050 | Sports instructors & officials | 64 | 8 | 87 |
| 181 | 051 | Surveyors | 48 | 7 | 71 |
| 182-184 | 052 | Teachers (n.e.c.) | 72 | 9 | 89 |
| 185 | 053 | Technicians, med. & dent. | 48 | 7 | 73 |
| 190-191 | 054 | Technicians, testing | 62 | 8 | 80 |
| 192 | 055 | Technicians, (n.e.c.) | 62 | 9 | 83 |
| 193 | 056 | Therapists & healers (n.e.c) | 58 | 8 | 82 |
| 194 | 057 | Veterinarians | 78 | 9 | 95 |
| 195 | 058 | Professional, technical, & kindred workers (n.e.c.) | 65 | 9 | 86 |
| | | ~~Total~~ | | | |

* Less than .01

## II A: MANAGERS, OFFICIALS AND PROPRIETORS, EXCEPT FARM (SELF-EMPLOYED AND SALARIED)

| Census Book Code | ISR Code | Occupation | Duncan Socio-Economic Index | Duncan Population Decile | Census Socio-Economic Index |
|---|---|---|---|---|---|
| 250 | 061 | Buyers & dept. heads, store | 72 | 9 | 92 |
| 251 | 062 | Buyers & shippers, farm prod. | 33 | 6 | 51 |
| 252 | 063 | Conductors, railroad | 58 | 8 | 73 |
| 253 | 064 | Credit men | 74 | 9 | 92 |
| 254 | 065 | Floormen & floor mgrs., store | 50 | 8 | 79 |
| 260 | 066 | Inspectors, public admin. (incl. not rep.) | 63 | 8 | |
| 260(906+J) | 067 | Federal public admin. & postal service | 72 | 9 | 89 |
| 260(926) | 068 | State public admin. | 54 | 8 | 81 |
| 260(936) | 069 | Local public admin. | 56 | 8 | 82 |
| 262 | 070 | Mgrs. & super's, buildings. | 32 | 6 | 61 |
| 265 | 071 | Officers, pilots, pursers, & engineers, ship (other than navy or coastguard) | 54 | 8 | 79 |
| 270 | 072 | Officials and administrators | 66 | 8 | |
| 270(906 & J) | 073 | Federal pub. admin. & postal service (incl. not reported) | 84 | 9 | 94 |
| 270(926) | 074 | State pub. admin. | 66 | 9 | 90 |
| 270(936) | 075 | Local pub. admin. | 54 | 8 | 79 |
| 275 | 076 | Officials - lodge, society, union, etc. | 58 | 8 | 82 |
| 280 | 077 | Postmasters | 60 | 8 | 82 |
| 285 | 078 | Purchasing agents & buyers (n.e.c.) | 77 | 9 | 92 |

TOTAL

## III B: MANAGERS, OFFICIALS, & PROPRIETORS (N.E.C.) SALARIED ONLY

| | | | | | |
|---|---|---|---|---|---|
| R-SALARIED | - 290 | If NA industry - see "All Other Industry" below. For Agriculture, Forestry, Fisheries, & Mining - See "All Other Industries" below. | | | |
| R(C) | 080 | Construction | 40 | 8 | 84 |
| R(206-459 & M) | 081 | Manufacturing | 79 | 9 | 95 |
| R(507-526 L) | 082 | Transportation | 71 | 9 | 87 |
| R(536-579) | 083 | Communications, utilities & sanitary services | 76 | 9 | 93 |
| R(606-629) | 084 | Wholesale trade | 70 | 9 | 90 |
| | 085 | Retail trade (if NA item see "Other Retail Trade") | 56 | 8 | |
| R(637 & F) | 086 | Food & dairy products stores & milk retg. | 37 | 7 | 78 |
| R(639 & G) | 087 | Gen. mchdse. - 5 & 10 store | 68 | 9 | 90 |
| R(646 + 647) | 088 | Apparel & access. stores & shoe stores | 69 | 9 | 89 |
| R(649 + 669) | 089 | Furniture, home furn, & equipment stores | 68 | 9 | 89 |
| R(656) | 090 | Motor vehicles & access., retail | 66 | 8 | 88 |
| R(657) | 091 | Gasoline service stations | 31 | 6 | 63 |
| R(658) | 079 | Drugstores | 39 | 8 | |
| R(D) | 092 | Eating and drink places | 39 | 7 | 70 |
| R(666 + 676) | 093 | Hardware, farm implements, & building material, retail | 64 | 8 | 87 |
| R(678-696) | 094 | Other retail trade (incl. not rep.) | 59 | 8 | 84 |
| R(706 & 716) | 095 | Banking & other finance | 85 | 9 | 96 |
| R(726 & 736) | 096 | Insurance & other real estate | 84 | 9 | 96 |
| R(806 & 807) | 097 | Business services | 80 | 9 | 96 |
| R(808) | 098 | Auto repair & garages | 47 | 7 | 76 |
| R(809) | 099 | Misc. repair services | 53 | 8 | 81 |
| R(826-839) | 100 | Personal services | 50 | 8 | 78 |
| R(999 & 017-156, 066-698, A,B,E) | 101 | All other ind. (incl. not rep.) Incl. Agric. (for farm mgr. see code 222) Forestry, Fisheries, & Mining | 62 | 8 | 89 |
| | | TOTAL (SALARIED) | | 9 | |

*Less than .01

451

## II C: MANAGERS, OFFICIALS, & PROPRIETORS (N.E.C.) SELF-EMPLOYED ONLY

| Census Book Code | ISR Code | Occupation | Duncan Socio-Economic Index | Duncan Population Decile | Census Socio-Economic Index |
|---|---|---|---|---|---|
| R-SELF-EMPLOYED=291 | | (If NA ind. see "All Other Indus." below) For Agriculture, Forestry, Fisheries, & Mining, see "All Other Ind." below. | | | |
| R(C)SE | 103 | Construction | 51 | 8 | 79 |
| R(204-459, B,M)SE | 104 | Manufacturing | 61 | 8 | 88 |
| R(507-526,L) SE | 105 | Transportation | 43 | 7 | 73 |
| R(536-579)SE | 106 | Communications & utilities, & sanitary services | 44 | 7 | 72 |
| R(606-629)SE | 107 | Wholesale trade | 59 | 8 | 83 |
| | | Retail trade (If NA kind see "Other retail trade" | 43 | 7 | |
| R(637+F)SE | 109 | Food & dairy products stores & milk ret'g. | 33 | 6 | 54 |
| R(639+G)SE | 110 | Gen. Mchdse.-5&10 store | 47 | 7 | 72 |
| R(646+647)SE | 111 | Apparel & access. stores | 65 | 8 | 88 |
| R(648+649)SE | 112 | Furn., home furn., & equipment stores | 59 | 8 | 86 |
| R(656) SE | 113 | Motor vehicles & acc. | 70 | 9 | 89 |
| R(657)SE | 114 | Gasoline serv. stations | 33 | 6 | 63 |
| R(D)SE | 115 | Eating & drink places | 37 | 6 | 71 |
| R(666+676)SE | 116 | Hardware, farm impl., & building mat., retail | 61 | 8 | 90 |
| R(678-698+ 659)SE | 117 | Other retail trade (inc. not rep.) | 49 | 7 | 75 |
| R(706&716)SE | 118 | Banking & other finance | 85 | 9 | 97 |
| R(726&736)SE | 119 | Insurance & other real estate | 76 | 9 | 95 |
| R(806+807)SE | 120 | Business services | 67 | 9 | 91 |
| R(808)SE | 121 | Auto repair serv. & gar. | 36 | 6 | 68 |
| R(809) | 122 | Misc. repair services | 34 | 6 | 60 |
| R(828-839) SE | 123 | Personal services | 41 | 7 | 58 |
| R(999&017 -156,846- 898,A,F,Z) SE | 124 | All other ind. (incl. not rep.) Incl. Agric. (for farmer see Code N), Forestry, Fisheries, & Mining | 49 | 7 | 76 |
| | | TOTAL (SELF-EMPLOYED) | | 7 | |
| | | TOTAL (SALARIED) | | | |
| | | TOTAL (ITA) | | | |
| | | TOTAL MANAGERS, OFFICIALS PROPRIETORS (NON-FARM) | | | |

## III: CLERICAL AND KINDRED WORKERS

| Census Book Code | ISR Code | Occupation | Duncan Socio-Economic Index | Duncan Population Decile | Census Socio-Economic Index |
|---|---|---|---|---|---|
| 301 | 125 | Agents (n.e.c.) | 68 | 9 | 90 |
| 302 | 126 | Attendents & assis., Librar | 44 | 7 | 50 |
| 303 | 127 | Acc's., Physicians & dentists office | 38 | 6 | 56 |
| 304 | 128 | Baggagemen, transportation | 25 | 5 | 54 |
| 305 | 129 | Bank tellers | 52 | 8 | 75 |
| 310 | 130 | Bookkeepers | 51 | 8 | 73 |
| 312 | 131 | Cashiers | 44 | 7 | 69 |
| 313 | 132 | Collectors, bill & acct. | 39 | 7 | 66 |
| 314 | 133 | Dispatchers & starters, vehicle | 40 | 7 | 73 |
| 315 | 134 | Express messenger & railway mail clerks | 67 | 9 | 85 |
| 320 | 083 | File clerks | 44 | 7 | 73 |
| 321 | 173 | Insur. adjusters, examiners, & investigators | 62 | 8 | 89 |
| 323 | 135 | Mail carriers | 53 | 8 | 80 |
| 324 | 136 | Messenger & office boys | 28 | 5 | 43 |
| 325 | 137 | Office machine operators | 45 | 7 | 69 |
| 333 | 102 | Payroll & timekeepers | 44 | 7 | 73 |
| 340 | 108 | Postal clerks | 44 | 7 | 73 |
| 341 | 153 | Receptionists | 44 | 7 | 73 |
| Z | 507 | Secretaries | 61 | 8 | 82 |
| 343 | 138 | Shipping & rec. clerks | 22 | 5 | 58 |
| 345 | 139 | Stenographers | 61 | 8 | 82 |
| 350 | 501 | Stock clerks & storekeepers | 44 | 7 | 73 |
| 351 | 140 | Telegraph messengers | 22 | 5 | 33 |
| 352 | 141 | Telegraph operators | 47 | 7 | 75 |
| 353 | 142 | Telephone operators | 45 | 7 | 72 |
| 354 | 143 | Ticket, station & exp. agt. | 60 | 8 | 82 |
| 360 | 506 | Typists | 61 | 8 | 82 |
| Y | 144 | Clerical & kind. workers (n.e.c.) | 44 | 7 | 73 |
|  |  | TOTAL |  |  |  |

## IV: SALES WORKERS

| Census Book Code | ISR Code | Occupation | Duncan Socio-Economic Index | Duncan Population Decile | Census Socio-Economic Index |
|---|---|---|---|---|---|
| 380 | 145 | Ad. agents & salesmen | 66 | 9 | 90 |
| 381 | 146 | Auctioneers | 40 | 7 | 67 |
| 382 | 147 | Demonstrators | 35 | 6 | 62 |
| 383 | 148 | Hucksters & peddlers | 08 | 1 | 08 |
| 385 | 149 | Ins. agents & brokers & underwriters | 66 | 9 | 89 |
| 390 | 150 | Newsboys | 27 | 5 | 20 |
| 393 | 151 | Real estate agents & brokers | 62 | 8 | 86 |
| S<br>S=394 |  | Salesmen & sales clerks (n.e.c.) (If ind. NA see "Other Ind." | 47 | 7 |  |
| S(206-459 B,N) | 154 | Manufacturing | 63 | 8 | 88 |
| S(606-629) | 155 | Wholesale trade | 61 | 8 | 85 |
| S(637-696 D,F,G) | 156 | Retail trade | 39 | 6 | 61 |
| S(999 & all not above) | 157 | Other ind. (incl. not rep.) | 50 | 8 | 77 |
| 395 | 152 | Stock & bond salesmen | 73 | 9 | 94 |
|  |  | TOTAL |  |  |  |

| Census Book Code | ISR Code | Occupation | Duncan Socio-Economic Index | Duncan Population Decile | Census Socio-Economic Index |
|---|---|---|---|---|---|
| 401 | 158 | Bakers | 22 | 5 | 50 |
| 402 | 159 | Blacksmiths | 16 | 3 | 31 |
| 403 | 150 | Boilermaker | 33 | 6 | 59 |
| 404 | 161 | Bookbinders | 39 | 6 | 69 |
| 405 | 162 | Brickmasons, stonemasons, & tile-setters | 27 | 5 | 50 |
| 410 | 163 | Cabinetmakers | 23 | 5 | 48 |
| Q | 164 | Carpenters | 19 | 4 | 35 |
| 413 | 165 | Cement & concrete finishers | 19 | 4 | 34 |
| 414 | 166 | Compositors & typesetters | 52 | 8 | 79 |
| 415 | 167 | Cranemen, derrickmen & hoistmen | 21 | 4 | 52 |
| 420 | 168 | Decorators & window dressers | 40 | 7 | 67 |
| 421 | 169 | Electricians | 44 | 7 | 74 |
| 423 | 170 | Electrotypers & stereotypers | 55 | 8 | 81 |
| 424 | 171 | Engravers, exc. photoengravers | 47 | 7 | 75 |
| 425 | 172 | Excavating, grading, & road machinery operators | 24 | 5 | 57 |
| 430 |  | Foremen (n.e.c.) (If ind. NA see "Other Ind.") | 49 | 7 |  |
| 430(C) | 174 | Construction | 40 | 7 | 65 |
| -- |  | Manufacturing (If mfg. but NA kind see "Other non-dur. goods" below) | 53 | 8 |  |
| 430(237-249) | 176 | Metal industries | 54 | 8 | 76 |
| 430(256-259,M) | 177 | Machinery, incl. elec. | 60 | 8 | 82 |
| 430(267-276) | 178 | Transportation equip. | 66 | 9 | 84 |
| 430(285-296,206-236) | 179 | Other durable goods | 41 | 7 | 71 |
| 430(346-367,3) | 180 | Textiles, textile products & apparel | 39 | 7 | 66 |
| 430(386-459,306-329) | 181 | Other non-dur. goods (incl. not spec. mfg.) | 53 | 8 | 79 |
| 430(L) | 182 | Railroads & railway exp. services | 36 | 6 | 61 |
| 430(536-579) | 184 | Telecommunications & utilities & sanitary services | 56 | 8 | 79 |
| 430(999+017-156,606-936,A,D,E,F,G,H,J) | 185 | Other ind. (incl. not rep) | 44 | 7 | 73 |
| 431 | 186 | Forgemen & hammermen | 23 | 5 | 51 |
| 432 | 187 | Furriers | 39 | 6 | 66 |
| 434 | 188 | Glaziers | 26 | 5 | 57 |
| 435 | 189 | Heat treaters, annealers, & temperers | 22 | 5 | 58 |
| 444 | 190 | Inspectors, scalers, & graders, log & lumber | 23 | 5 | 48 |
| 450 |  | Inspectors (n.e.c.) (If NA ind. see "Other Ind." below) | 41 | 7 |  |
| 450(C) | 192 | Construction | 46 | 7 | 76 |
| 450(L) | 193 | Railroads & railway exp. serv. | 41 | 7 | 65 |
| 450(507-579) | 194 | Transport., exc. rr comm. & other pub. utilities | 45 | 7 | 74 |
| 450(999 & all not above, except J, K, 906-936) | 195 | Other non-mfg. ind. (incl. not rep.) | 38 | 6 | 71 |
| 431 | 196 | Jewelers, watchmakers, goldsmiths, & silversmiths | 36 | 6 | 63 |
| 452 | 197 | Job-setters, metal | 28 | 5 | 64 |
| 453 | 198 | Linemen & servicemen, telegraph, telephone, & power | 49 | 7 | 76 |

* Less than .5%

V : Craftsmen, Foremen, & Kindred Workers (continued)

| Census Book Code | ISR Code | Occupation | Duncan Socio-Economic Index | Duncan Population Decile | Census Socio-Economic Index |
|---|---|---|---|---|---|
| 450 | 199 | Locomotive engineers | 58 | 8 | 68 |
| 460 | 200 | Locomotive firemen | 45 | 7 | 76 |
| 461 | 201 | Loom fixers | 10 | 1 | 32 |
| 465 | 202 | Machinists | 33 | 6 | 68 |
|  |  | Mechanics & repairmen | 25 | 5 |  |
| 470 | 203 | Airconditioning, heating & refrigeration | 27 | 5 | 61 |
| 471 | 204 | Airplane | 48 | 7 | 79 |
| 472 | 205 | Automobile | 19 | 4 | 52 |
| 473 | 206 | Office machine | 36 | 6 | 66 |
| 474 | 207 | Radio & television | 36 | 6 | 62 |
| 475 | 208 | Railroad & car shop | 23 | 5 | 52 |
| 480 | 209 | Not elsewhere classified (incl. NA type) | 27 | 5 | 61 |
| 490 | 210 | Millers, grain, flour, feed, etc. | 19 | 4 | 39 |
| 491 | 211 | Millwrights | 31 | 6 | 62 |
| 492 | 212 | Molders, metal | 12 | 1 | 41 |
| 493 | 213 | Motion picture projectionists | 43 | 7 | 73 |
| 494 | 214 | Opticians & lens grinders & polishers | 39 | 6 | 72 |
| 495 | 215 | Painters, const. & maint. | 16 | 3 | 37 |
| 501 | 216 | Paperhangers | 10 | 1 | 22 |
| 502 | 217 | Pattern & model makers, exc. paper | 44 | 7 | 74 |
| 503 | 218 | Photoengravers & lithog's | 64 | 8 | 84 |
| 504 | 219 | Piano & organ tuners & repairs | 38 | 6 | 54 |
| 505 | 220 | Plasterers | 25 | 5 | 46 |
| 510 | 221 | Plumbers & pipefitters | 34 | 6 | 64 |
| 512 | 222 | Pressmen & plate printers, printing | 49 | 7 | 77 |
| 513 | 223 | Rollers & roll hands, metal | 22 | 5 | 54 |
| 514 | 224 | Roofers & slaters | 15 | 3 | 34 |
| 515 | 225 | Shoemakers & repairers, exc. factory | 12 | 1 | 22 |
| 520 | 226 | Stationary engineers | 47 | 7 | 72 |
| 521 | 227 | Stone-cutters & carvers | 25 | 5 | 44 |
| 523 | 228 | Structural metal workers | 34 | 6 | 66 |
| 525 | 230 | Tinsmiths, coppersmiths, & sheet metal workers | 33 | 6 | 68 |
| 530 | 231 | Tool & die makers & setters | 50 | 8 | 77 |
| 535 | 232 | Upholsterers | 22 | 5 | 53 |
| 545 | 233 | Craftsmen & kind. workers, n.e.c. | 32 | 6 | 62 |
| 555 | 428 | Members of the armed forces: Enlisted men |  |  |  |
| 555 | 429 | Officers | * |  |  |
| 555 | 244 | N.A. whether enlisted or officer | * |  |  |
|  |  | TOTAL |  |  |  |

* Less than .01

| Census Book Code | ISR Code | Occupation | Duncan Socio-Economic Index | Duncan Population Decile | Census Socio-Economic Index |
|---|---|---|---|---|---|
| | | Apprentices (If trade NA) see trade) | 35 | 6 | |
| 601 | 236 | Auto mechanics | 25 | 5 | 46 |
| 602 | 237 | Bricklayers & masons | 32 | 6 | 57 |
| 603 | 238 | Carpenters | 31 | 5 | 50 |
| 604 | 239 | Electricians | 37 | 6 | 61 |
| 605 | 240 | Machinists & toolmakers | 41 | 7 | 59 |
| 610 | 241 | Mechanics, exc. auto | 36 | 6 | 60 |
| 612 | 242 | Plumbers & pipefitters | 33 | 6 | 60 |
| 613 | 243 | Building trades (n.e.c.) | 29 | 5 | 49 |
| 614 | 245 | Metalworking trades (n.e.c.) | 33 | 6 | 55 |
| 615 | 246 | Printing trades | 40 | 7 | 57 |
| 620 | 247 | Other specified trades | 31 | 5 | 51 |
| 621 | 248 | Trade not specified | 39 | 6 | 55 |
| 630 | 249 | Asbestos & insulation workers | 32 | 6 | 63 |
| 631 | 451 | Assemblers | 17 | 4 | 61 |
| 632 | 250 | Attendants, auto serv. & parking | 19 | 4 | 44 |
| 634 | 251 | Blasters & powdermen | 11 | 1 | 33 |
| 635 | 252 | Boatmen, canalmen, & lock keepers | 24 | 5 | 50 |
| 640 | 253 | Brakemen, railroad | 42 | 7 | 71 |
| 641 | 254 | Bus-drivers | 24 | 5 | 65 |
| 642 | 256 | Chainmen, rodmen, axemen, survey | 25 | 5 | 47 |
| 643 | 500 | Checkers, examiners, & inspectors, manual | 17 | 4 | 61 |
| 645 | 257 | Conductors, bus & street rw | 30 | 5 | 61 |
| 650 | 258 | Deliverymen & routemen | 32 | 6 | 59 |
| 651 | 259 | Dressmakers & seamstresses, exc. factory | 23 | 5 | 35 |
| 652 | 260 | Dyers | 12 | 1 | 36 |
| 653 | 261 | Filers, grinders & polishers, metal | 22 | 5 | 57 |
| 654 | 262 | Fruit, nut & veget. graders, & packers, exc. factory | 10 | 1 | 19 |
| 670 | 263 | Furnacemen, smeltermen, pourers | 18 | 3 | 45 |
| 671 | 299 | Graders, sorters, manuf. | 17 | 4 | 14 |
| 672 | 264 | Heaters, metal | 29 | 5 | 56 |
| 673 | 300 | Knitters, loopers, toppers, textile | 21 | 4 | 47 |
| 674 | 265 | Laundry & dry cleaning oper. | 15 | 3 | 37 |
| 675 | 266 | Meatcutters, exc. slaughter & packing house | 29 | 5 | 60 |
| 680 | 267 | Milliners | 46 | 7 | 73 |
| 685 | 268 | Mine operators & laborers (n.e.c.) (If NA which below) | 10 | 1 | |
| 685(136) | 269 | Coal mining | 02 | 0 | 18 |
| 685(146) | 270 | Crude petrol & nat gas | 38 | 6 | 70 |
| 685(136+126) | 271 | Mining & quarrying, exc fuel | 12 | 1 | 36 |
| 690 | 272 | Motormen, mine, factory, logging camp, etc. | 33 | 0 | 28 |
| 691 | 273 | Motormen, street, subway, etc. | 34 | 6 | 64 |
| 692 | 274 | Oilers & greasers, exc auto | 15 | 3 | 44 |
| 693 | 235 | Packers & wrappers n.e.c. | 18 | 4 | 38 |
| 694 | 275 | Painters, exc. const. & maint. | 18 | 4 | 47 |
| 695 | 276 | Photographic process workers | 42 | 7 | 65 |
| 701 | 277 | Power-station operators | 50 | 8 | 78 |
| 703 | 278 | Sailors & deck hands | 16 | 3 | 40 |
| 704 | 255 | Sawyers | 05 | 0 | 10 |
| 705 | 279 | Sewers & stitchers, manuf. | 17 | 4 | 39 |
| 710 | 280 | Spinners, textile | 05 | 0 | 20 |
| 712 | 281 | Stationary firemen | 17 | 3 | 40 |
| 713 | 282 | Switchmen, railroad | 44 | 7 | 72 |

* Less than .01

VI: Operatives & Kindred Workers ~~(continued)~~

| Census Book Code | ISR Code | Occupation | Duncan Socio-Economic Index | Duncan Population Decile | Census Socio-Economic Index |
|---|---|---|---|---|---|
| 714 | 283 | Taxi drivers & chauffers | 10 | 1 | 37 |
| T | 284 | Truck & tractor drivers | 15 | 3 | 40 |
| 720 | 285 | Weavers, textile | 06 | 0 | 27 |
| 721 | 286 | Welders & flame cutters | 24 | 5 | 62 |
| W |  | Operatives & Kindred Workers N.E.C. |  |  |  |
| W=775 |  | Non-Manufacturing |  |  |  |
| W(C) | 363 | Construction (For other non-mfg. ind. see after mfg. ind. see after mfg. industries below) | 18 | 4 | 38 |
|  |  | Manufacturing (If NA what kind of mfg. see under "Manufacturing") | 18 | 3 |  |
|  |  | Durable goods | 17 | 3 |  |
|  |  | Lumber & wood products, exc. furniture |  |  |  |
| W(206) |  |  |  |  |  |
| W(207) | 290 | Sawmills, planing mills, & millwork | 07 | 1 | 12 |
| W(208) | 291 | Misc. wood products | 09 | 1 | 25 |
| W(209) | 292 | Furniture & fixtures | 09 | 1 | 27 |
| W(216-236) | 293 | Stone, clay & glass prod. (If NA which below) | 17 | 3 |  |
| W(216) | 294 | Glass & glass products | 23 | 5 | 50 |
| W(217) | 295 | Cement, concrete, & gypsum prod. & plaster | 10 | 1 | 29 |
| W(218) | 296 | Structural clay products | 10 | 1 | 31 |
| W(219) | 297 | Pottery & related products | 21 | 4 | 49 |
| W(236) | 299 | Misc. nonmetallic mineral & stone products | 15 | 3 | 41 |
|  |  | Metal Industries | 16 | 3 |  |
| W(237) | 301 | Blast furnaces, steel works & rolling mills | 17 | 3 | 49 |
| (238) | 302 | Other primary iron & steel industries | 18 | 1 | 39 |
| (239) | 303 | Primary nonferrous ind. | 15 | 3 | 47 |
| (246) | 304 | Cutlery, hand tools, & other hardware | 16 | 3 | 48 |
| (247) | 305 | Fabricated structural met. products | 16 | 3 | 48 |
| (248) | 306 | Misc. Fab. metal prods. | 13 | 3 | 48 |
| (249) | 307 | Not spec. metal industries | 14 | 2 | 47 |
| (256 + 57, M) | 308 | Machinery, exc. elec. (If NA which below) | 22 | 5 |  |
| (255) | 309 | Agricultural machinery | 21 | 4 | 59 |
| (257) | 310 | Office & store machines & devices | 31 | 5 | 67 |
| (M) | 311 | Misc. machinery | 22 | 5 | 57 |
| (259) | 312 | Elec. mach., & equip. & supp. | 26 | 5 | 62 |
| (267-276) | 313 | Trans. equip. (If NA which below) | 23 | 5 |  |
| (267) | 314 | Motor veh. & equip. | 21 | 4 | 61 |
| (268) | 315 | Aircraft & parts | 34 | 6 | 71 |
| (269) | 316 | Ship & boat bldg. & repairing | 16 | 3 | 41 |
| (276) | 317 | Railroad & misc. trans. equipment | 23 | 5 | 56 |
| (286-289) | 318 | Professional & photographic equip. & watches (If NA which below) | 29 | 5 |  |
| (286) | 319 | Prof. equip. & supplies | 23 | 5 | 57 |
| (287) | 320 | Photo equip. & supplies | 40 | 7 | 73 |
| (289) | 321 | Watches, clock, & clockwork operated devices | 28 | 5 | 62 |
| (296) | 322 | Misc. mfg. ind. | 16 | 3 | 42 |

* Less than .01

VI: Operatives & Kindred Workers (n.e.c.) (continued)

| Census Book Code | ISA Code | Occupation | Duncan Socio-Economic Index | Duncan Population Decile | Census Socio-Economic Index |
|---|---|---|---|---|---|
| | | Nondurable goods | | | |
| | | Food & kindred products (If NA which see Not spec. Food Ind. below) | 16 | 3 | |
| W(306) | 324 | Meat products | 16 | 3 | 43 |
| W(307) | 325 | Dairy products | 22 | 5 | 53 |
| W(308) | 326 | Canning & preserving fruits, veg., & sea foods | 09 | 1 | 26 |
| W(309) | 327 | Grain mill products | 14 | 3 | 36 |
| W(316) | 328 | Bakery products | 15 | 3 | 38 |
| W(317) | 329 | Confectionary & related products | 12 | 1 | 34 |
| W(318) | 330 | Beverage industries | 19 | 4 | 48 |
| W(319) | 331 | Misc. food prep. & kindred products | 11 | 4 | 32 |
| W(326) | 332 | Not spec. food ind. | 19 | 4 | 46 |
| W(329) | 333 | Tobacco mfg. | 02 | 0 | 13 |
| W(346-356) | 334 | Textile mill prod. (If NA which below) | 04 | 0 | |
| W(346) | 335 | Knitting mills | 21 | 4 | 47 |
| W(347) | 336 | Dyeing & finishing textiles, exc. knit goods | 08 | 1 | 38 |
| W(348) | 337 | Carpets, rugs, floor cov. | 14 | 3 | 44 |
| W(349) | 338 | Yarn, thread, & fab. mills | 02 | 0 | 14 |
| W(356) | 339 | Misc. tex. mill prod. | 10 | 1 | 33 |
| W(367&B) | 340 | Apparel & other fabricated textile prod. (If NA which below) | 21 | 5 | |
| W(B) | 341 | Apparel & access. | 22 | 5 | 39 |
| W(367) | 342 | Misc. fab. tex. prod. | 17 | 3 | 36 |
| W(386-389) | 343 | Paper & allied products (If NA which below) | 19 | 4 | |
| W(386) | 344 | Pulp, paper, & paperbd. mills | 19 | 4 | 51 |
| W(387) | 345 | Paperboard containers, boxes | 17 | 3 | 37 |
| W(389) | 346 | Misc. paper & pulp prod. | 19 | 4 | 52 |
| W(396+398) | 347 | Printing, publishing, & allied industries | 31 | 5 | 60 |
| W(406-409) | 348 | Chemical & allied prod. (If NA which below) | 20 | 4 | |
| W(406) | 349 | Synthetic fibres | 09 | 1 | 51 |
| W(407) | 350 | Drugs & medicines | 26 | 5 | 57 |
| W(408) | 351 | Paints, varnishes, & related prod. | 15 | 3 | 51 |
| W(409) | 352 | Misc. chem. & allied prod. | 23 | 5 | 55 |
| W(416+419) | 353 | Petroleum & coal prod. (If NA which below) | 31 | 8 | |
| W(416) | 354 | Petroleum refining | 36 | 8 | 79 |
| W(419) | 355 | Misc. pet. & coal prod. | 14 | 2 | 44 |
| W(426& 429) | 356 | Rubber prod. & misc. plastic products | 22 | 5 | |
| W(436-438) | 357 | Leather & leather prod. (If NA which below) | 16 | 3 | |
| W(436) | 358 | Leather: tanned, curried & finished | 10 | 1 | 37 |
| W(437) | 359 | Footwear exc. rubber | 09 | 1 | 31 |
| W(438) | 360 | Leather prod. exc. footwear | 14 | 2 | 36 |
| W(439) | 361 | Not spec. mfg. ind. (Incl. MFG. but NA kind) | 16 | 3 | 44 |
| | | Other non-manufacturing | | | |
| | | Construction-see before mfg. industries (If NA what kind see Not. Spec. Ind. below) | | | |
| W(L) | 364 | Railroads & railway express services | 15 | 3 | 42 |
| W(507-526) | 365 | Transportation, exc. rail | 23 | 5 | 53 |
| W(536-579) | 366 | Communications & utilities & sanitary services | 21 | 6 | 52 |
| W(606-699, D.F.G) | 367 | Wholesale & retail trade | 17 | 3 | 38 |
| W(806-809) | 368 | Business & repair services | 19 | 4 | 45 |
| W(826-839 K) | 369 | Personal services | 11 | 1 | 29 |
| W(906-936 J) | 370 | Public administration | 17 | 3 | 50 |
| W(999-non-manuf.) | 362 | Not spec. non-mfg. ind. (Incl. non-mfg. but NA kind) | 18 | 3 | |
| W(999 & 017-018, 706-736, 846-898, A.E.H) | 371 | All other industries | 20 | 4 | |
| | | TOTAL | | | |

458

* Less than .01

## VII: SERVICE WORKERS, EXCEPT PRIVATE HOUSEHOLD

| Census Book Code | ISR Code | Occupation | Duncan Socio-Economic Index | Duncan Population Decile | Census Socio-Economic Index |
|---|---|---|---|---|---|
| 810 | 380 | Attendants, institutions, hosp. | 13 | 1 | 38 |
| 812 | 381 | Attendants, prof. & per. serv. n.e.c. | 26 | 5 | 46 |
| 813 | 382 | Att's. rec. & amusement | 19 | 4 | 26 |
| 814 | 383 | Barbers | 17 | 3 | 37 |
| 815 | 384 | Bartenders | 19 | 4 | 46 |
| 820 | 386 | Bootblacks | 08 | 1 | 02 |
| 821 | 385 | Boarding & lodg. housekeepers | 30 | 5 | 35 |
| 823 | 237 | Chambermaids & maids, exc. private household | 11 | 1 | 18 |
| 824 | 387 | Charwomen & cleaners | 10 | 1 | 15 |
| 825 | 388 | Cooks, exc. priv. h.h. | 15 | 3 | 31 |
| 830 | 389 | Counter & fountain workers | 17 | 3 | 41 |
| 831 | 390 | Elevator operators | 10 | 1 | 28 |
| 832 | 939 | Housekeepers & stewards, exc. private households | 31 | 6 | 61 |
| 834 | 394 | Janitors & sextons | 09 | 1 | 18 |
| 835 | 502 | Kitchen workers n.e.c. exc. private households | 11 | 1 | 18 |
| 840 | 396 | Midwives | 37 | 6 | 51 |
| 841 | 400 | Porters | 04 | 0 | 16 |
| 842 | 401 | Practical nurses | 22 | 5 | 32 |
| 843 | 288 | Hairdressers, cosmetologists | 17 | 3 | 37 |
| 850 | 391 | Firemen, fire protection | 37 | 6 | 73 |
| 851 | 392 | Guards, watchmen, doorkeepers | 18 | 4 | 38 |
| 852 | 393 | Marshalls & constables | 21 | 5 | 44 |
| 853 | 397 | Policemen & detectives (If NA which below) | 39 | 7 |  |
| 853(All others) | 399 | Private | 36 | 6 | 67 |
| 853(306-336,J) | 398 | Government | 40 | 7 | 74 |
| 854 | 402 | Sheriffs & bailiffs | 34 | 6 | 66 |
| 860 | 405 | Watchmen (crossing) & bridge tenders | 17 | 3 | 39 |
| 874 | 403 | Ushers, recreation & amusement | 25 | 5 | 34 |
| 875 | 404 | Waiters & waitresses | 16 | 3 | 39 |
| 890 | 406 | Service workers except private household (n.e.c.) | 11 | 1 | 18 |
|  |  | TOTAL |  |  |  |
|  |  | * Less then .01 |  |  |  |

## VIII: PRIVATE HOUSEHOLD WORKERS

| Census Book Code | ISR Code | Occupation | Duncan Socio-Economic Index | Duncan Population Decile | Census Socio-Economic Index |
|---|---|---|---|---|---|
| 801 | 175 | Baby sitters, priv. households | 07 | 1 | 07 |
| 802 | 372 | Housekeepers, priv. h.h. (If NA which below) | 19 | 4 |  |
| 802(L,O) | 374 | Living out | 21 | 4 | 32 |
| 802(LI) | 373 | Living in | 10 | 1 | 25 |
| 803 | 375 | Laundress, priv. h.h. (If NA which below) | 12 | 1 |  |
| 803(LO) | 376 | Living out | 12 | 1 | 09 |
| 803(LI) | 505 | Living in | — | — | 09 |
| P | 377 | Priv. h.h. workers n.e.c. (If NA which below) | 07 | 1 |  |
| P(LO) | 379 | Living out | 06 | 0 | 07 |
| P(LI) | 378 | Living in | 12 | 1 | 26 |
|  |  | TOTAL |  |  |  |
|  |  | * Less than .01 |  |  |  |

IX: FARMERS AND FARM MANAGERS (NOT LABORERS & FOREMEN)

| Census Book Code | ISR Code | Occupation | Duncan Socio-Economic Index | Duncan Population Decile | Census Socio-Economic Index |
|---|---|---|---|---|---|
| N(self owner) | 019 | Farmers (farm owners) | 14 | 2 | |
| N(ten. share) | 059 | Farmers (tenants & share-croppers) | 14 | | |
| N(NA type) | 191 | Farmers (NA which type) | 14 | 2 | |
| 222 | 060 | Farm managers | 36 | 6 | |
| | | TOTAL | | | |

X: FARM LABORERS AND FOREMEN

| Census Book Code | ISR Code | Occupation | Duncan Socio-Economic Index | Duncan Population Decile | Census Socio-Economic Index |
|---|---|---|---|---|---|
| 901 | 407 | Farm foremen | 20 | 4 | |
| U | 408 | Farm laborers, wage workers | 06 | 0 | |
| V | 409 | Farm lab., unpaid family workers | 17 | 3 | |
| 905 | 410 | Farm service lab., self-emp | 22 | 5 | |
| | | TOTAL | | | |

| Census Book Code | ISR Code | Occupation | Duncan Socio-Economic Index | Duncan Population Decile | Census Socio-Economic Index |
|---|---|---|---|---|---|
| 960 | 323 | Carpenters helpers, exc. logging & mining | 07 | 0 | 16 |
| 962 | 411 | Fishermen & oystermen | 10 | 1 | 11 |
| 963 | 412 | Garage laborers, car washers & greasers | 08 | 1 | 24 |
| 964 | 413 | Gardeners, exc. farm and groundskeepers | 11 | 1 | 19 |
| 965 | 414 | Longshoremen & stevedores | 11 | 1 | 23 |
| 970 | 415 | Lumbermen, raftsmen, wood-choppers | 04 | 0 | 04 |
| 971 | 416 | Teamsters | 08 | 1 | 13 |
| 972 | 417 | Truck drivers' helper | 09 | 1 | 28 |
| 973 | 303 | Warehousemen n.e.c. | 08 | 1 | 28 |
|  |  | Laborers, n.e.c.<br>Non-manufacturing | 07 | 1 |  |
| X(C) | 491 | Construction (for other non-mfg. ind. see after mfg. industries below) | 07 | 1 | 16 |
| X(985) |  | Manufacturing (if NA what kind see not spec. ind. under manufacturing below) | 08 | 1 |  |
|  |  | Durable goods: |  |  |  |
|  |  | Lumber & wood prod. exc. furn. |  |  |  |
| X(206) |  | Logging |  |  |  |
| X(207) | 419 | Sawmills, planing mills, & millwork | 03 | 0 | 04 |
| X(208) | 420 | Misc. wood products | 02 | 0 | 09 |
| X(209) | 421 | Furniture & Fixtures | 05 | 0 | 19 |
| X(216-236) | 422 | Stone, clay & glass prod. (If NA which below) | 07 | 1 |  |
| X(216) | 423 | Glass & glass products | 16 | 2 | 31 |
| X(217) | 424 | Cement, concrete, gypsum, plaster products | 05 | 0 | 22 |
| X(218) | 425 | Structural clay products | 03 | 0 | 19 |
| X(219) | 426 | Pottery & related prod. | 07 | 1 | 30 |
| X(236) | 427 | Misc. nonmetallic mineral & stone products | 05 | 0 | 23 |
|  |  | Metal industries | 07 | 1 |  |
| X(237) | 430 | Blast furnaces, steel works, rolling mills | 09 | 1 | 33 |
| X(238) | 431 | Other primary iron & steel ind. | 06 | 0 | 18 |
| X(239) | 432 | Primary nonferrous ind. | 06 | 0 | 26 |
| X(246) | 433 | Cutlery, hand tools & other hardware | 07 | 1 | 27 |
| X(247) | 434 | Fabricated structural metal products | 07 | 1 | 27 |
| X(248) | 435 | Misc. fab. met. prod. | 10 | 1 | 27 |
| X(249) | 436 | Not spec. metal ind. | 09 | 1 | 28 |
| X(256-257, 8) | 437 | Machinery, exc. elec. (If NA which below) | 11 | 1 |  |
| X(256) | 438 | Agric. mach., tractors | 14 | 2 | 38 |
| X(257) | 439 | Office & store machines & devices | 17 | 3 | 43 |
| X(M) | 440 | Miscellaneous machinery | 10 | 1 | 32 |
| X(259) | 441 | Electrical machinery, equipment and supplies | 14 | 2 | 43 |
| X(267-276) | 442 | Transportation equipment (If NA which below) | 11 | 1 |  |
| X(267) | 443 | Motor vehicles & motor vehicle equipment | 13 | 1 | 42 |
| X(268) | 444 | Aircraft and parts | 15 | 2 | 31 |
| X(269) | 445 | Ship & boat bldg. rep. | 02 | 0 | 19 |
| X(276) | 446 | Railroad & misc. transportation equipment | 08 | 1 | 31 |

XII. Laborers (continued)

| Census Item Code | IOB Code | Occupation | Base on Census Economic Index | Base on Population Decile | Census Socio-Economic Index |
|---|---|---|---|---|---|
| X(286-289) | 447 | Professional & photographic equipment & watches (If NA which below) | 11 | 1 | |
| X(286) | 448 | Profess. equip. & supp. | 10 | 1 | 37 |
| X(287) | 449 | Photo. equip. & supp. | 10 | 1 | 41 |
| X(289) | 306 | Watches, clocks, & clockwork operated devices | 11 | 1 | 39 |
| X(296) | 450 | Misc. mfg. industries | 13 | 1 | 28 |
| | | Nondurable goods: | | | |
| | | Food & kindred prod. (If NA which see Not Spec. Food Ind. below) | 19 | 1 | |
| X(306) | 452 | Meat products | 08 | 1 | 37 |
| X(307) | 453 | Dairy products | 13 | 1 | 36 |
| X(308) | 454 | Canning & preserv. fruits vegetables & sea foods | 06 | 0 | 13 |
| X(309) | 455 | Grain-mill products | 08 | 0 | 23 |
| X(316) | 456 | Bakery products | 10 | 1 | -30 |
| X(317) | 457 | Confect., & related prod. | 10 | 1 | 33 |
| X(318) | 458 | Beverage industries | 16 | 2 | 36 |
| X(319) | 459 | Misc. food prep. & kind. prod. | 05 | 0 | 17 |
| X(326) | 460 | Not spec. food ind. | 14 | 2 | 40 |
| X(329) | 461 | Tobacco manufactures | 10 | 0 | 30 |
| X(346-356) | 462 | Textile mill products (If NA which below) | 03 | 0 | |
| X(346) | 463 | Knitting mills | 06 | 0 | |
| X(347) | 464 | Dyeing & finishing textiles except knit goods | 19 | 1 | |
| X(348) | 465 | Carpets, rugs, floor covering | 16 | 2 | |
| X(349) | 466 | Yarn, thread, & fabric mills | 01 | 0 | 12 |
| X(356) | 467 | Misc. textile-mill products | 06 | 0 | 16 |
| X(367&48) | 468 | Apparel & other fab. textile products | 19 | 1 | 21 |
| X(8) | 469 | Apparel & accessories | 11 | 1 | |
| X(367) | 470 | Misc. fab. textile products | 06 | 0 | |
| X(386-389) | 471 | Papers & allied prod. (If NA which below) | 07 | 1 | |
| X(386) | 472 | Pulp, paper, & paperbd. mills | 05 | 0 | 27 |
| X(387) | 473 | Paperbd. containers & boxes | 10 | 1 | 31 |
| X(389) | 474 | Misc. paper & pulp products | 05 | 1 | 30 |
| X(396&338) | 475 | Printing, publishing, allied industry | 23 | 3 | 30 |
| X(406-409) | 476 | Chemicals & allied products (If NA which below) | 08 | 1 | |
| X(406) | 477 | Synthetic fibers | 04 | 0 | 30 |
| X(407) | 478 | Drugs & medicines | 22 | 5 | 46 |
| X(408) | 479 | Paints, varnishes and related products | 08 | 1 | 42 |
| X(409) | 480 | Misc. chemicals & allied products | 33 | 1 | 18 |
| X(416 & 419) | 481 | Petroleum & coal products (If NA which below) | 22 | 3 | |
| X(416) | 482 | Petroleum refining | 26 | 3 | 50 |
| X(419) | 483 | Misc. petroleum and coal products | 03 | 0 | 26 |
| X(426&429) | 484 | Rubber products | 12 | 1 | 44 |
| X(436-38) | 485 | Leather & leather products (If NA which below) | 06 | 0 | 27 |
| X(436) | 486 | Leather: tanned, curried & finished | 02 | 0 | |
| X(437) | 487 | Footwear, except rubber | 10 | 1 | |
| X(438) | 488 | Leather products except footwear | 12 | 1 | |
| X(439) | 489 | Not specified manufacturing industries (Incl. manuf. but NA kind) | 08 | 1 | 28 |
| X(L) | 492 | Railroads & railway express service | 03 | 0 | 20 |
| X(507-326) | 493 | Transportation, except railroads | 09 | 1 | 28 |
| X(336-379) | 494 | Telecommunications and utilities & sanitary service | 06 | 0 | 18 |
| X(606-696) | 495 | Wholesale & retail trade | 12 | 1 | 29 |
| X(796-807) | 496 | Business & repair services | 26 | 1 | 39 |
| X(K,826-839) | 497 | Personal services | 09 | 0 | 01 |
| X(906-936 J) | 498 | Public administration | 19 | 1 | 07 |
| X(999-non manuf.) | 499 | Non-manufacturing (Incl. non-manuf. NA kind) | 07 | 1 | |
| X(999-017-018,706-699,??) | 499 | All other industries (incl. not reported.) | 07 | 0 | 36 |
| | | Total | | | |

* Less than .01

# APPENDIX J

## Data Collection Procedures

## DATA COLLECTION PROCEDURES

This section describes the methods and procedures used in collecting Phase II baseline and posttest data. Specifically, the areas of interviewer selection, field staff training, data collection procedures, and data base management are covered.

### Interviewer Selection

Interviewers were recruited primarily from the Washington, D.C. metropolitan area. More than 600 potential field interviewers were screened using the following primary criteria:

- relevant academic qualifications in special education or early childhood education;
- classroom teaching experience;
- experience in administration of individual assessments to young handicapped children; and
- experience in classroom observation using a standardized recording instrument.

Secondary criteria included:

- previous data collection experience;
- direct experience with Head Start; and
- Spanish-speaking capability.

The second step in interviewer selection was a personal interview with each candidate whose qualifications met at least two of the above criteria. The personal interview served a dual purpose: (1) to explain the scope and purpose of the study and to confirm that the applicant had an understanding of the requirements of the field interviewer position, and (2) to be sure that the experiences of the applicant were consistent with the skills required by data collection activities.

Forty-nine interviewers were hired to constitute 11 teams of five persons each. In addition, six regular fulltime employees of Applied Management Sciences served as team leaders. The remaining team leader positions were filled by returning field staff who had assisted with data collection during Phase I of the study.

Of the 55 baseline field interviewers, over two-thirds had advanced degrees in early childhood or special education and/or direct classroom experience with young handicapped children.

In identifying a sub-set of this group for more specialized training in the administration of an individual child assessment instrument, the Learning Accomplishment Profile--Diagnostic Edition (LAP-D) and in the Prescott-SRI Child Observation System, additional criteria were considered. For the LAP-D trainees, it was important that the individual had had experience in administering standardized assessments to young children. For those field staff selected to be trained in the Prescott-SRI, a first consideration was whether the individual had had experience in observing and coding child behavior in a classroom setting.[1/] A second selection factor was whether the interviewer had experience as a Montessori teacher, since the Montessori training emphasizes careful observation of children's behavior within the classroom; and, therefore, these teachers would already be sensitized to observing children in a classroom setting.

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[1/] Although personnel from SRI International indicated that these factors had not been useful in predicting success in the use of the Prescott-SRI Child Observation System, Applied Management Sciences found that individuals with previous classroom observation experience performed very successfully in training as well as field observation activities.

Based on baseline data collection experience Applied Management Sciences' project staff determined that fewer field staff were required if the Prescott-SRI and the Learning Accomplishment Profile-Diagnostic Edition were administered by more interviewers. This would increase the capability of each interviewer and also increase the flexibility of the team to respond to specific information collection requirements. Of the 32 posttest interviewers, 27 were trained to administer the Prescott-SRI and 26 were trained and certified in the use of LAP-D. Sixteen of the baseline interviewers returned for posttest data collection activities. Of these, eight were returning Prescott-SRI observers.

The posttest interviewer training followed the same general format as the baseline training. However, the posttest training was conducted in two separate groups to accommodate the different training needs of the interviewers. The returning Prescott-SRI interviewers were given an intensive five-day review course and the remaining staff were given the complete seven-day Prescott-SRI training course.[1]

## Field Staff Training

The purpose of this section is to describe the field training activities in which the Phase II interviewers participated and the extent of their involvement. As much as possible the training program was designed to: (1) simulate the actual data collection experience anticipated in the field and (2) insure that the trainees developed the competencies necessary for the accurate and reliable administration of the data collection instruments.

The majority of the training program was conducted by the project staff. However, in cases where training specifically focused on the administration of some of the standardized test protocol e.g., the Learning Accomplishment Profile-Diagnostic Edition (LAP-D), the Prescott-SRI Child Observation System, and the Alpern-Boll

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[1] Training was extended to ten days for a few individuals who were not completely comfortable with the observation procedure after the initial seven-day session.

Developmental Profile, specialists from the Chapel Hill Outreach-Training Project, SRI International, and the Fairfax County Public School system were used.

In addition to utilizing the expertise of outside consultants for training, several local Head Start and non-Head Start programs which were not included in the Phase II study sample provided their facilities to afford trainees an opportunity for practicum experiences in LAP-D assessment and in classroom observations.

The intensive training program was divided into the following target components:

- Component I - Core Training
- Component II - Administration of the LAP-D
- Component III - Administration of the Prescott-SRI Child Observation System

The various training activities which occurred within each of these components will be described below:

Component I: Core Training

The core training sessions were organized into 15 instructional modules designed to provide (1) an indepth orientation to the overall data collection process and (2) information on the administration of the data collection instruments whose primary respondents were teachers, parents or program directors.

Each module was structured to be conducted primarily as a workshop.[1/] Extensive use was made of (1) lecture presentations; (2) role playing and simulation exercises, (3) practicum experiences, and (4) small group discussions. In addition, an interviewers' training manual was developed to assist trainees in the assimilation and synthesis of information presented during each module.

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[1/] Each module was designed to be conducted as one unit. However, on occasion the information was expanded over a number of the sessions depending on the needs of the group and/or time available to the project trainers.

The key information presented to the interviewers within the orientation modular sessions focused on:

- Interviewer roles and responsibilities
- Phase II study design/purpose/methodology
- Nature of Head Start programs and background information on the handicapped effort
- Travel logistics and expense reporting
- Behavior observation and interviewing techniques

Concurrently, emphasis was placed on: (1) developing the interviewer's objectivity of approach to all respondents; (2) maintaining respondent confidentiality; and (3) insuring regular examination of all data collection forms for accuracy and completeness.

In the subsequent instruction modules, interviewers were provided training in the administration of the core data collection instruments. The core assessment instruments were specifically those Phase II tests/questionnaires whose focal respondents were either parents, teachers or program directors. These included the following:

- Parent Assessment Instruments
  Schaefer Parent Inventory
  Phase II Parent Interview Schedule
  High Scope Home Environment Scale
  Alpern-Boll Developmental Profile
- Teacher Assessment Instruments
  Schaefer Teacher Inventory I
  Schaefer Teacher Perception of the Environment Inventory
  Phase II Teacher Interview Schedule
  California Preschool Social Competency Scale
- Case Background Data Profile
- Program Director Assessment Instruments
  Phase II Primary Data Schedule
  Case Follow-Up Schedule

The training activities which occurred within each of these subsequent modules consisted of providing the field interviewers with (1) theoretical information and techniques relevant to the successful administration of each core assessment instrument and (2) practicuum experiences in a variety of simulated environments (e.g., school, home, etc.).

All core training activities were conducted by the project staff in conjunction with a child development specialist from the Fairfax County Public School system. The specialist provided a four-hour indepth seminar in the administration of the Alpern-Boll Developmental Profile which focused particularly on the test's: (1) purpose and methodology, (2) varied administration techniques, and (3) scoring procedures and interpretation.

## Component II: Administration of LAP-D

The interviewer's training in the administration of the Learning Accomplishment Profile - Diagnostic Edition was implemented by a technical assistant and training specialist from the Chapel Hill Training/Outreach Project. The specialist conducted an intensive six hour workshop during which the theory and practice of the LAP-D administration were covered in detail. In addition to a thorough explanation of the test's construction, purpose, foundations, and procedures for administration, the participants viewed a videotape of an actual test administration. Further, throughout the training the importance of strict adherence to the procedures specified in the LAP-D examiner's manual was particularly emphasized.

Upon the completion of the LAP-D training workshop, interviewers were required to successfully administer, under the supervision of a certified LAP-D tester, two assessments prior to the commencement of data collection activities in the field. This procedure was stipulated in order to assess whether or not each participant had mastered all of the competencies necessary for LAP-D certification.

The certification procedure was standardized for all interviewers. Each participant was randomly assigned two children for testing. The children were between the ages of 3-5 years and were enrolled in a local Head Start program which was not included in the study. These children were selected for assessment because: 1) their characteristics closely matched those of the Head Start population included in the Phase II study sample, and 2) these preliminary assessments would as much as possible stimulate actual test conditions in the field.

### Component III: Administration of the Prescott-SRI Child Observation System

The interviewers' training in the administration of the Prescott-SRI Child Observation System was conducted by a Prescott-SRI trainer/consultant from SRI International. Seven days of training were scheduled culminating with a three-hour reliability test, designed to measure trainer-trainee reliability.

Throughout the seven day session several training techniques were used to familiarize the trainees with the child codes and the systematic observation procedures. After all components and data collection procedures of the Prescott-SRI had been discussed and the individual codes defined, trainees were given an initial assignment to develop illustrations of each child code. This provided a common foundation for discussion on what was or was not included as a coded behavior. In addition to actual practice sessions in local Head Start and non-Head Start programs, video-tape segments were provided to simulate classroom situations and vignettes of classroom interactions were read to trainees to practice coding.

Periodically during the training sessions reliability checks were conducted. Segments of a video tape were played while trainees coded. After coding, correct codes were given by the trainers and discrepancies between trainer and trainee coding were discussed.

Only those interviewers who met the .75 trainer/trainee reliability criteria were certified to collect data using the Prescott-SRI Child Observation System.

## Baseline Teams

Upon successful completion of all core training activities for the pretest, interviewers were divided into teams consisting of one team leader and four team members. The team itself was modified often depending upon the number of non-Head Start programs at any given site. In addition, interviewers who were fluent in Spanish were transferred from one team to another at a specific site as needed.

Each interviewing team was structured so that at least two members were trained in either the administration of the Prescott-SRI-Child Observation Schedule or LAP-D. However, all interviewers were trained in the administration of the coredata collection instruments.

## Posttest Teams

For posttest data collection, all staff were trained to administer the Alpern-Boll Development Profile and the Prescott-SRI Child Observation Schedule. The flexibility provided by the additional persons trained in the Prescott-SRI and the LAP-D permitted a reduced number of interviewers during the posttest data collection. A team leader was designated for each site and, as in the baseline data collection effort, interviewers were transferred to different teams and sites throughout the data collection period as personnel demands required.

## Editing and Verification

Since the conclusions drawn from any statistical analysis are only usable if the data on which they are based are accurate, the process of editing and verifying all elements of the data base is critical. Applied Management Sciences, Inc. recognizes this requirement and has exercised extreme care that all data, both test scores and demographic classifications, were verified for accuracy.[1/]

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[1/] See Exhibit H.1 and H.2 for a flow chart of the data base development.

EXHIBIT J.1: DATA BASE DEVELOPMENT

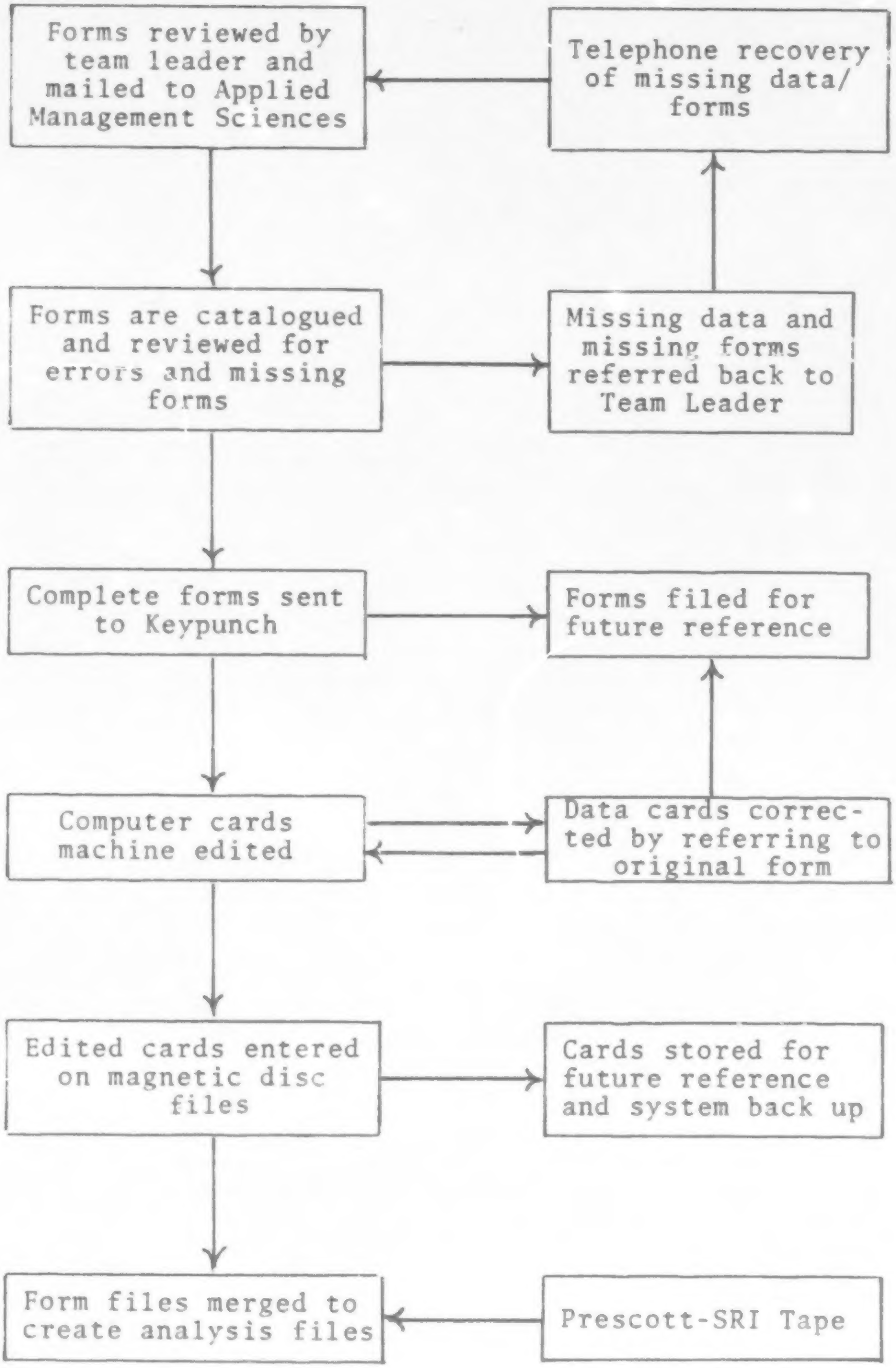
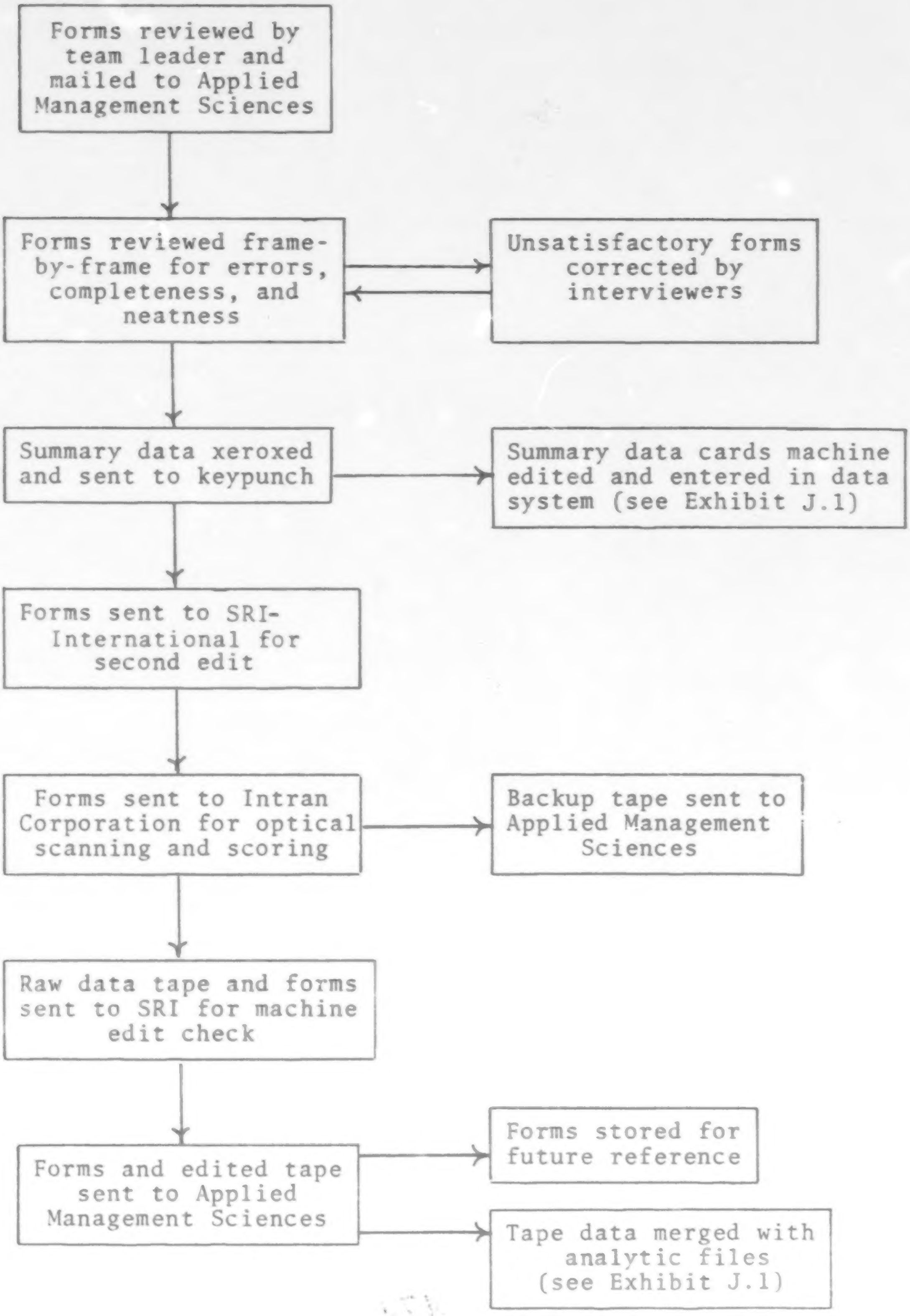

Forms reviewed by team leader and mailed to Applied Management Sciences
Telephone recovery of missing data/ forms
Forms are catalogued and reviewed for errors and missing forms
Missing data and missing forms referred back to Team Leader
Complete forms sent to Keypunch
Forms filed for future reference
Computer cards machine edited
Data cards corrected by referring to original form
Edited cards entered on magnetic disc files
Cards stored for future reference and system back up
Form files merged to create analysis files
Prescott-SRI Tape

EXHIBIT J.2: PRESCOTT-SRI EDITING


Forms reviewed by team leader and mailed to Applied Management Sciences
Forms reviewed frame-by-frame for errors, completeness, and neatness
Unsatisfactory forms corrected by interviewers
Summary data xeroxed and sent to keypunch
Summary data cards machine edited and entered in data system (see Exhibit J.1)
Forms sent to SRI-International for second edit
Forms sent to Intran Corporation for optical scanning and scoring
Backup tape sent to Applied Management Sciences
Raw data tape and forms sent to SRI for machine edit check
Forms and edited tape sent to Applied Management Sciences
Forms stored for future reference
Tape data merged with analytic files (see Exhibit J.1)

# APPENDIX K

## Instrument Abstracts

## ALPERN-BOLL DEVELOPMENTAL PROFILE

AUTHORS: Gerald D. Alpern and Thomas J. Boll

PURPOSE: This instrument was developed to assess a child's skill in five developmental areas: physical, self-help, social, academic, and communication. It was designed to obtain these data from a secondary source rather than from a direct assessment of the child.

TYPE OF INSTRUMENT: Personal Interview - Standardized.

DATA SOURCE: Parent (or other person familiar with the child)

STANDARDIZATION SAMPLE:

The Developmental Profile Standardization sample was composed of 1,527 non-handicapped male and 1,481 non-handicapped female children. The age range of the sample was from six months through twelve years. The racial distribution was 84% white, 14% black, and 2% "oriental," "mixed," or "other."

Class distribution based on the father's occupation was 80% middle class, 9% lower class, and 11% upper class. Geographic distribution was 89% from large cities, 9% from small cities, and 2% from rural or small towns. The sample was selected from children in the states of Indiana and Washington.

VALIDITY: The authors conducted a study of 100 children to test the validity of the mother's interview assessment of her child. They developed a validity index based on the percent of agreement between the mother's report of a child's skills and the child's actual skills as demonstrated through direct assessment of the child:

| | |
|---|---|
| Physical scale | 84% agreement |
| Self-help | 85% agreement |
| Social | 84% agreement |
| Academic | 87% agreement |
| Communication | 81% agreement |
| Total Profile Average | 84% agreement |

ADMINISTRATION: For the purposes of this study a special scoring method was employed to compensate for the scattered developmental patterns some handicapped children display. The standardized scoring method calls for the establishment of a basal level and a ceiling. The standard basal level is assumed to be established when a child is found to have "passed" all items in two consecutive development levels beginning at one year less than the child's chronological age. The standard ceiling is reached when all items in two developmental levels have been failed.

Applied Management Sciences modified this scoring method. A "double" basal level was established by beginning two years younger than the chronological age of the child and working backward to obtain a double level of all items "passed." A "triple" ceiling was established by continuing to assess the child until all items in three consecutive levels were "failed." This double basal and triple ceiling procedure better ensured an adequate assessment of the handicapped child's capability since performance patterns for this group tend to be erratic and scattered.

# HIGH/SCOPE HOME ENVIRONMENT SCALE

AUTHORS: High/Scope Educational Research Foundation

PURPOSE: This instrument is designed to gather information on the quality of the child's parental interaction, play, and home environment.

TYPE OF INSTRUMENT: Questionnaire

DATA SOURCE: Parent

ADMINISTRATION: The High Scope Home Environment Scale was used for both baseline and posttest data collection. The parent was interviewed following the structured questions provided in the questionnaire. Clarification questions are permitted and items are either scored pass-fail or on a scale of 1 to 3.

# CALIFORNIA PRESCHOOL SOCIAL COMPETENCY SCALE

AUTHORS: Samuel Levine, Freeman F. Elzey, and Mary Lewis

PURPOSE: The California Preschool Social Competency Scale was developed to measure the child's interpersonal behavior and social responsibility in the context of a preschool program. It is designed to serve as a criterion measure of the effectiveness of differing preschool interventions and in the evaluation of certain handicapping categories.

TYPE OF INSTRUMENT: Standardized Questionnaire - Can be self-administered or administered through an interview.

DATA SOURCE: Teacher

ADMINISTRATION: This instrument was self-administered by the teachers when possible and administered by an interview when circumstances dictated.

# PARENT INTERVIEW SCHEDULE

AUTHORS: Applied Management Sciences

PURPOSE: The Parent Interview Schedule gathered demographic information about each child's family including: family composition, structure, education level and occupation of parents. In addition, parent attitudes about their child and the idea of mainstreaming and expectations about the child's program were assessed.

TYPE OF INSTRUMENT: Structured Interview Questionnaire

DATA SOURCE: Parent

ADMINISTRATION: The data pertaining to this instrument was obtained in a personal interview with the parent of each dhild. The full instrument was administered in baseline data collection. Only the attitude scales were re-administered during posttest.

# SCHAEFER TEACHER INVENTORY I

AUTHORS: Earl Schaefer, Marianna Edgerton, and Mary Comstock

PURPOSE: The purpose of this instrument is to assess teacher's attitudes toward parent involvement in the program, certain classroom structures, and the teacher's attitudes towards certain educational values.

TYPE OF INSTRUMENT: Likert-type attitude scales

DATA SOURCE: Teacher

ADMINISTRATION: This questionnaire was developed from selected scales of Schaefer and Edgerton's "Parent-Teacher-Child Inventory Teacher Form" and the "Inventory of Educational Beliefs," by Schaefer, Edgerton, and Comstock. Primarily, this instrument was self-administered following a brief explanation of the 1 to 5 rating scale for each item. Where the reading ability of the teacher was suspect, the measure was administered through an interview.

# SCHAEFER TEACHER PERCEPTION OF THE ENVIRONMENT

AUTHOR: Earl Schaefer

PURPOSE: This instrument is designed to assess the teacher's attitudes about program policies, administration, support from colleagues, and the importance of certain job factors.

TYPE OF INSTRUMENT: Likert-type attitude scale

DATA SOURCE: Teacher

ADMINISTRATION: This instrument was developed from selected scales of the Schaefer "Teacher Perception of School Environment" from the "Inventory of Educational Beliefs," by Schaefer, Edgerton, and Comstock.

# CASE BACKGROUND AND DATA PROFILE

AUTHORS: Applied Management Sciences

PURPOSE: This instrument was developed to assess demographic characteristics of the child: handicap, severity, birthdate, classroom structure, curriculum, and enrollment information.

TYPE OF INSTRUMENT: Structured interview questionnaire.

DATA SOURCE: Program director, handicap coordinator, teacher.

ADMINISTRATION: Field staff interviewed key program staff to obtain the required data during the pretest. This instrument was not readministered during posttesting.

# CASE BACKGROUND DATA PROFILE
(NON-SERVED)

AUTHORS: Applied Management Sciences

PURPSOE: To assess demographic characteristics of the non-served child: identified handicapping condition, birth date, sex, and age.

TYPE OF INSTRUMENT: Structured interview questionnaire.

DATA SOURCE: Parent

ADMINISTRATION: This instrument was administered in conjunction with the other parent instruments during the posttest data collection activities. Personal interviews were used.

# PRIMARY DATA INTERVIEW SCHEDULE

AUTHORS: Applied Management Sciences

PURPOSE: This instrument was developed specifically for this study to obtain data from the individual programs on their enrollment, program structure, curriculum, and funding.

TYPE OF INSTRUMENT: Self-administered questionnaire

DATA SOURCE: Program Director

ADMINISTRATION: This instrument was mailed to the programs prior to the baseline data collection. The forms were collected by the field staff team-leaders and reviewed on site for missing or incomplete data. This instrument was only administered once.

# TEACHER INTERVIEW SCHEDULE

AUTHORS: Applied Management Sciences

PURPOSE: The Teacher Interview Schedule was designed to assess demographic characteristics of the teacher: background characteristics, class composition, salary, education level, and certification. Attitudes towards mainstreaming handicapped children were assessed through a brief attitude measure.

TYPE OF INSTRUMENT: Questionnaire

DATA SOURCE: Teacher

ADMINISTRATION: This instrument was administered in its entirety during the baseline data collection. Only the attitudinal measures were administered during posttesting.

# LEARNING ACCOMPLISHMENT PROFILE - DIAGNOSTIC EDITION

AUTHORS: David W. Lemay, Patricia M. Griffin, and Anne R. Sanford

PURPOSE: Provide direct functional assessment of child's skill development in four areas: gross motor, fine motor, cognitive and cognitive/language. The main functions served by the LAP-D are:

- Evaluation of the child's entry level skills prior to program intervention
- Evaluation of the child's posttest skills
- Validation of the program intervention.

TYPE OF INSTRUMENT: Performance tests - standardized

DATA SOURCE: Child

RELIABILITY VALIDITY: The retest reliability coefficients for the instrument subscales are: Gross Motor ($r = .97$), Fine Motor ($r = .97$), Cognitive ($r = .96$), Cognitive/Language ($r = .91$). Total test interrater reliability is equal to .98.

ADMINISTRATION: Administration of the instrument took from 50 to 100 minutes depending upon the child's attention span and speed of response. When deemed necessary by the interviewer, the child was assessed over two or more sessions. Scoring each scale followed the standard method used with the LAP-D of determining a basal with three consecutive passed items and a ceiling with three out of five items failed.

# PRESCOTT-SRI CHILD OBSERVATION SYSTEM

AUTHORS: Elizabeth Prescott and SRI International.

PURPOSE: This instrument is used to record specific child behavior and interaction incidents and summarize general behavior patterns of the child in the classroom.

TYPE OF INSTRUMENT: Structured observations in classroom.

DATA SOURCE: Child.

ADMINISTRATION: Each child was observed for two 20 minute periods during baseline data collection and again for two periods at the posttest. The observer, using an earphone "beeper," recorded behavior at precise 12 second intervals according to a complex and comprehensive coding schema.

# ALPERN-BOLL DEVELOPMENTAL PROFILE
## (SHORT FORM)

AUTHORS: Gerald D. Alpern and Thomas J. Boll - modified by the West Virginia Appalachian Laboratory

PURPOSE: This shortened version of the Developmental Profile was developed to assess child development through abbreviated teacher interviews rather than through extensive parent interviews.

TYPE OF INSTRUMENT: Self-administered questionnaire - standardized

DATA SOURCE: Teacher

ADMINISTRATION: This teacher administered "short form" of the instrument was used for three separate purposes:

1. when parent information appeared to be inaccurate;
2. when parent information could not be obtained; or
3. for joint administration to both the teacher and parent in order to determine the accuracy of the teacher report data.

## APPENDIX L

## Instruments

Study instruments presented in this appendix are those used during pretest data collection activities. Not included in this appendix are the Alpern-Boll Developmental Profile (long form), the Learning Accomplishment Profile, and most of the Prescott-SRI Child Observation System. Copyright considerations precluded their reproduction for this report.

Where appropriate, table citations or raw pretest data are provided for each item in this appendix. For raw pretest data, Head Start information is designated by "H.S.", non-Head Start data by "N.H.S.", and non-served control group data by "N.S." For the California Preschool Social Competency Scale, pretest as well as posttest data are provided for each item in the Scale.

For reference purposes, the pretest sample included 429 Head Start children, 353 non-Head Start children, and 154 non-served children. Posttest sample sizes were 392,321, and 117, respectively.

Items marked as "N/A" identify data elements that were not amendable to simple summarization were not used in data analysis activities, or were supplanted by other data collected during the posttest data collection cycle.

# PHASE II PRIMARY DATA SCHEDULE

Phase II Primary Data Schedule (1)

21-22 = "01"

1. WHAT IS THE TOTAL NUMBER OF PRESCHOOL CHILDREN CURRENTLY ENROLLED IN YOUR PROGRAM?

23-26 ☐☐☐☐ (Table 6.2, page 6.3)

1a. TOTAL NUMBER OF HANDICAPPED CHILDREN?

27-29 ☐☐☐

| | H.S | N.H.S. |
|---|---|---|
| 1-10 | 20 | 33 |
| 11-20 | 70 | 107 |
| 21-30 | [illegible] | 53 |
| > 30 | 139 | 147 |

2. GENERALLY, WHAT IS THE RATIO OF HANDICAPPED CHILDREN TO NON-HANDICAPPED CHILDREN?

30-31 ☐☐ (Table 6.3, page 6.5)

3. HOW LONG HAVE YOU BEEN SERVING HANDICAPPED PRESCHOOLERS?

32

1 less than one year
2 1-2 years
3 3-4 years
4 5-7 years
5 8-10 years
6 over 10 years

(Table 6.10, page 6.12)

33

4. DO YOU SERVE NON-HANDICAPPED PRESCHOOLERS?

2 no
1 yes

| | H.S | N.H.S. |
|---|---|---|
| No | 0 | 292 |
| Yes | 423 | 50 |

34

5. ARE THERE CURRENTLY ANY MEMBERS OF YOUR PROGRAM STAFF WHOSE PRIMARY OR EXCLUSIVE FUNCTION IS TO PROVIDE CONSULTING AND/OR RESOURCE SERVICES TO HANDICAPPED CHILDREN?

2 no
1 yes

35-36 ☐☐ Number of full-time teaching staff
37-38 ☐☐ Number of part-time teaching staff

| | | H.S | N.H.S. |
|---|---|---|---|
| full-time | $\bar{x}$ | .634 | 1.10 |
| part-time | $\bar{x}$ | .675 | .8 |

| | | | | |
|---|---|---|---|---|
| 39-40 | | | ☐☐ | Number of full-time resource staff |
| 41-42 | $\bar{x}$ | .739 | 2.534 | ☐☐ Number of part-time resource staff |
| 43-44 | $\bar{x}$ | 1.316 | 2.446 | |
| | $\bar{x}$ | 4.351 | 3.435 | ☐☐ Number of volunteers |

45 6. DO YOU PROVIDE A MAINSTREAM PROGRAM FOR YOUR HANDICAPPED CHILDREN?

| | H.S | N.H.S. |
|---|---|---|
| 3 | 0 | 208 |
| 2 | 15 | 5 |
| 1 | 413 | 139 |

3 no

2 Yes, but only for non-classroom activities (free play, lunch, etc.)

1 yes

↳ 6a. WHAT TYPES OF MAINSTREAMING ARE AVAILABLE THROUGH YOUR PROGRAM? *(Check all that apply)*

(Tables 6.4, 6.5; pages 6.6-6.7)

46 ___ complete mainstreaming of handicapped child into a regular classroom *(no supportive services provided)*

47 ___ complete mainstreaming of handicapped child into a regular classroom with supportive assistance provided by a specialist

48 ___ complete mainstreaming of handicapped children in a classroom where the regular classroom teacher and a special education teacher cooperatively work with all children *(a team arrangement)*

49 ___ reverse mainstreaming in which normal children become part of a special education class

50 ___ partial mainstreaming where handicapped children are in a special education class but go to mainstreamed classes for one or more regular classroom activities

51 ___ handicapped children receive services from your program but are not mainstreamed

7. PLEASE INDICATE THE PROGRAM OPTIONS THAT ARE AVAILABLE TO THE CHILDREN IN YOUR PROGRAM. (*Check all that apply*)

| | | | H.S | N.H.S. |
|---|---|---|---|---|
| 52 | ____ | 5 days a week, center based full time | 224 | 240 |
| 53 | ____ | 4 days a week, full time | 33 | 33 |
| 54 | ____ | split sessions | 45 | 97 |
| 55 | ____ | other variations in center-based attendance | 135 | 38 |
| 56 | ____ | double sessions (*or part day*) 5 days a week | 56 | 163 |
| 57 | ____ | double sessions (*or part day*) less than 5 days a week | 41 | 106 |
| 58 | ____ | home based, no center attendance | 29 | 35 |
| 59 | ____ | home based, center attendance, 1-2 times weekly | 37 | 73 |
| 60 | ____ | home based, other regular schedule for center attendance | 52 | 56 |
| 61 | ____ | home based, variable center attendance (*including special activities*) | 31 | 40 |
| 62 | ____ | locally-designed options (*must have center attendance, otherwise code as* | 44 | 50 |

8. DO THE CENTERS IN YOUR PROGRAM USE STANDARDIZED CURRICULUM FOR THE HANDICAPPED CHILDREN?

| | | | H.S | N.H.S. |
|---|---|---|---|---|
| 63 | 2 | No | 116 | 73 |
| | 1 | Yes | 296 | 279 |

↳ 8a. Which standardized curriculae does your program use? (*Check the ones that apply*)

| | H.S | N.H.S | | |
|---|---|---|---|---|
| 64 | 87 | 136 | ___ | Portage |
| 65 | 134 | 202 | ___ | Peabody |
| 66 | 138 | 87 | ___ | Learning Accomplishment Profile - Curriculum |
| 67 | 34 | 22 | ___ | Cognitive (Ypsilanti) |
| 68 | 37 | 82 | ___ | Montessori |
| 69 | 16 | 152 | ___ | Frostig |
| 70 | 39 | 175 | ___ | Other (*specify*)________________ |
| 71 | 31 | 57 | ___ | Other (*specify*)________________ |

493

L.4

| H.S. 1 | H.S. 2 | H.S. 3 | H.S. 4 | N.H.S. 1 | N.H.S. 2 | N.H.S. 3 | N.H.S. 4 |
|---|---|---|---|---|---|---|---|
| 151 | 201 | 58 | 13 | 98 | 212 | 23 | 19 |
| 139 | 163 | 95 | 26 | 47 | 174 | 83 | 42 |
| 230 | 154 | 8 | 26 | 119 | 170 | 20 | 24 |
| 162 | 230 | 36 | - | 122 | 239 | 40 | 22 |
| 209 | 118 | 101 | - | 53 | 173 | 190 | - |
| 181 | 143 | 144 | - | 26 | 52 | 274 | - |
| 76 | 73 | 279 | - | 19 | 35 | 298 | - |
| 181 | 234 | 26 | 27 | 105 | 156 | 55 | 36 |
| 37 | 140 | 186 | 67 | 3 | 93 | 207 | 49 |
| 37 | 252 | 77 | 62 | 47 | 225 | 63 | 17 |
| 48 | 172 | 115 | 93 | 55 | 170 | 81 | 36 |
| 293 | 42 | 78 | 5 | 69 | 124 | 129 | 30 |
| 162 | 181 | 14 | 71 | 138 | 138 | 21 | 55 |

9. **DO YOU COORDINATE YOUR PROGRAM OF SERVICES FOR HANDICAPPED CHILDREN WITH ANY OF THE AGENCIES/INSTITUTIONS IN YOUR COMMUNITY LISTED BELOW?** *(Circle the number that applies for each agency listed)*

22 = "02"

|  |  | None in the Area | No | Yes, Occasionally | Yes, Extensively |
|---|---|---|---|---|---|
| 23 | Private practitioner/ consultant | 4 | 3 | 2 | 1 |
| 24 | Hospital | 4 | 3 | 2 | 1 |
| 25 | Health clinic or department (public or state) | 4 | 3 | 2 | 1 |
| 26 | Mental health clinic or department (public or state) | 4 | 3 | 2 | 1 |
| 27 | Medicaid | 4 | 3 | 2 | 1 |
| 28 | Food Stamps Program | 4 | 3 | 2 | 1 |
| 29 | Food Commodities | 4 | 3 | 2 | 1 |
| 30 | Charitable Association (Easter Seal, Crippled Children Assoc., etc.) | 4 | 3 | 2 | 1 |
| 31 | Planned Parenthood | 4 | 3 | 2 | 1 |
| 32 | Family counseling agencies | 4 | 3 | 2 | 1 |
| 33 | Day Care program | 4 | 3 | 2 | 1 |
| 34 | Head Start Program | 4 | 3 | 2 | 1 |
| 35 | University affiliated facilities | 4 | 3 | 2 | 1 |
| 3[illegible]-37, 38 | Other N/A | 4 | 3 | 2 | 1 |
| 3[illegible]-40, 41 | Other N/A | 4 | 3 | 2 | 1 |
| 4[illegible]-43, 44 | Other N/A | 4 | 3 | 2 | 1 |

10. **WHAT IS YOUR TOTAL FUNDING FOR FISCAL YEAR 1977?**

45-51 ☐☐☐☐☐☐☐ (Table 6.1, page 6.3)

11. OF THE FOLLOWING FUNDS, WHICH HAVE YOU SPECIFICALLY EARMARKED (ALL OR A PORTION) FOR SERVICES TO THE HANDICAPPED? PLEASE INDICATE SOURCE, AMOUNT, AND LENGTH OF TIME YOU HAVE RECEIVED THESE FUNDS.

| | SOURCE OF FUNDS | AMOUNT (enter figure) | NUMBER OF YEARS RECEIVED (enter number) |
|---|---|---|---|
| 52-58, 59-60 | Basic Head Start grant | ☐☐☐☐☐☐☐ | ☐☐ |
| 61-67, 68-69 | Head Start Supplemental funds | ☐☐☐☐☐☐☐ | ☐☐ |
| 70-76, 77-78<br>21-22 = "03" | BEH First Chance funds | ☐☐☐☐☐☐☐ | ☐☐ |
| 23-29, 30-31 | State "reimbursement of services" funds | ☐☐☐☐☐☐☐ | ☐☐ |
| 32-38, 39-40 | Other State funds | ☐☐☐☐☐☐☐ | ☐☐ |
| 41-47, 48-49 | Other local funds | ☐☐☐☐☐☐☐ | ☐☐ |
| 50-56, 57-58 | Other Federal funds | ☐☐☐☐☐☐☐ | ☐☐ |
| 59-65, 66-67 | Other Education for the Handicapped Act funds | ☐☐☐☐☐☐☐ | ☐☐ |
| 68-74, 75-76<br>21-22 = "04" | Parent tuition | ☐☐☐☐☐☐☐ | ☐☐ |
| 3-24, 25-31, 32-33 | Other (specify) ________________ | ☐☐☐☐☐☐☐ | ☐☐ |
| 1-35, 36-42, 43-44 | Other (specify) ________________ | ☐☐☐☐☐☐☐ | ☐☐ |

(Data from this set of questions unreliable and were not considered for analytical consideration)

# CASE BACKGROUND DATA PROFILE
# (FALL)

21-22="01"

## CASE BACKGROUND DATA PROFILE

1. WHAT IS THIS CHILD'S BIRTH DATE?

3-24,25-26,27-28 ☐☐ ☐☐ ☐☐
*(month) (day) (year)*

1a. This child's age today is: *(Interviewer: Calculate child's age subtracting birthdate from today's date)*

29,30-31 ☐ years and ☐☐ months

2. WHAT IS THIS CHILD'S PRIMARY HANDICAPPING CONDITION? *(Circle one)*

32-33

1 visually impaired
2 blind
3 hearing impaired
4 deaf
5 physical handicap
6 speech impaired
7 health or developmentally impaired
8 mentally retarded
9 specific learning disability
10 serious emotional disturbance

Table 4.1, page 4.3)

3. WHAT IS THE SEVERITY OF THIS CHILD'S PRIMARY HANDICAP? *(Circle one)*

34

1 mild
2 moderate
3 severe
4 profound
5 not relevant *(deaf and blind only)*

Table 4.3, page 4.7)

*(Interviewer: Be sure to show criteria cards to indicate the way in which these categories are defined for the handicapped identified in #2)*

35 4. WOULD THIS CHILD BE CONSIDERED AS MULTIPLY HANDICAPPED?

2 no

1 yes

| | H.S | N.H.S |
|---|---|---|
| 2 | 283 | 135 |
| 1 | 144 | 157 |

(*specify handicaps; use codes from #2*)

36-37,38-39,40-41 ☐☐ ☐☐ ☐☐ N/A

42 5. IS THIS CHILD PARTICIPATING IN A MAINSTREAMING PROGRAM?

2 no

1 yes

(Table 6.7, page 6.9)

43 5a. IN WHICH OF THE FOLLOWING MAINSTREAMING OPTIONS HAVE YOU PLACED THIS CHILD? (*Check one that applies*)

(Tables 6.4, 6.5; pages 6.6–6.7)

1 complete mainstreaming of handicapped child into a regular classroom (*no supportive assistance*)

2 complete mainstreaming of handicapped child into a regular classroom with supportive assistance provided by a specialist

3 complete mainstreaming of handicapped children in a classroom where the regular classroom teacher and a special education teacher cooperatively work with all children (*a team arrangement*)

4 reverse mainstreaming in which normal children become part of a special education class

5 partial mainstreaming where handicapped children are in a special education class but go to mainstreamed classes for one or more regular classroom activities

6 handicapped children receive services from your program but are not mainstreamed

44-45 5b. HOW MANY HOURS WOULD YOU ESTIMATE THIS CHILD SPENDS IN A MAINSTREAMING SITUATION WITH NORMAL CLASSMATES?

☐☐ (*Hours per week*)

| | H.S. | N.H.S. |
|---|---|---|
| $\bar{x}$ | 21.446 | 3.037 |

(3

5c. HOW MANY HOURS IS THIS CHILD'S MAINSTREAMING SITUATION POTENTIALLY AVAILABLE?

46-47 ☐☐ *(Hours per week)*

| | H.S. | N.H.S. |
|---|---|---|
| $\bar{x}$ | 22.55 | 13.46 |

48-50 ☐☐☐ *(Interviewer: Compute percentage of available mainstreaming time the child actually participates in)*

| H.S. | N.H.S. |
|---|---|
| 33.7% | 11.3% |

6. IS THIS CHILD INVOLVED IN A CLASSROOM THAT USES A LOCALLY DESIGNED CURRICULUM?

51

2 No

1 Yes

| | H.S. | N.H.S. |
|---|---|---|
| 2 | 121 | 119 |
| 1 | 306 | 233 |

6a. Which of the following types of curriculums were designed.

| H.S. | N.H.S. |
|---|---|
| 115 | 156 |
| 133 | 39 |

52 ___ Performance based (criterion referenced)

53 ___ Experienced based (discovery learning)

54-56 ___ Other *(specify)* N/A

57-59 ___ Other *(specify)* N/A

7. IS THIS CHILD INVOLVED IN A CLASSROOM THAT USES A CURRICULUM THAT IS LOCALLY ADAPTED FROM A STANDARDIZED CURRICULUM?

60

2 No

1 Yes

| | H.S. | N.H.S. |
|---|---|---|
| 2 | 39 | 102 |
| 1 | 338 | 250 |

7a. Which of the following standardized curriculum were adapted? *(Check all that apply)*

| H.S. | N.H.S. |
|---|---|
| 75 | 35 |
| 146 | 56 |
| 139 | 190 |
| 32 | 15 |
| 33 | 51 |
| 34 | 34 |
| 134 | 120 |
| 44 | 37 |

61 ___ Portage

62 ___ Learning Accomplishment Profile - Curriculum

63 ___ Peabody

64 ___ Cognitive (Ypsilanti)

65 ___ Montessori

66 ___ Frostig

67,68-69 ___ Other *(specify)* ______________________

70,71-72 ___ Other *(specify)* ______________________

**8.** **HOW LONG HAS THIS CHILD BEEN IN YOUR PROGRAM?**

73

1 less than one year

2 one year

3 2 years

4 over 2 years

| | H.S. | N.H.S. |
|---|---|---|
| 1 | 271 | 147 |
| 2 | 90 | 73 |
| 3 | 52 | 69 |
| 4 | 15 | 63 |

**9.** **HOW WOULD YOU CHARACTERIZE THE INVOLVEMENT OF THIS CHILD'S PARENTS IN YOUR PROGRAM?**

74

1 very active

2 average involvement

3 only minor involvement

4 do not participate at all

| | H.S. | N.H.S. |
|---|---|---|
| 1 | 124 | 127 |
| 2 | 132 | 133 |
| 3 | 119 | 68 |
| 4 | 53 | 24 |

**10.** **ARE THERE ANY SERVICES YOU WOULD LIKE TO MAKE AVAILABLE EITHER TO THIS CHILD OR HIS/HER FAMILY THAT YOU HAVE NOT HAD THE RESOURCES AND/OR THE TIME TO PROVIDE?**

75

2 No

1 Yes

| | H.S. | N.H.S. |
|---|---|---|
| 2 | 309 | 211 |
| 1 | 119 | 141 |

→ What Services? *(Interviewer: Coding will be done at later date. Enter responses verbatim)*

N/A

76 ☐ ____________________

77 ☐ ____________________

78 ☐ ____________________

79 ☐ ____________________

500

# TEACHER INTERVIEW SCHEDULE
# (FALL)

L.12

## PART I: TEACHER BACKGROUND

Below you will find a series of questions about yourself and your experience with special children. Circle the answers to these questions which come closest to describing you and your background.

21-22="01"

For Office Use Only

1. How many years have you worked with preschool handicapped children?
   - 1 Less than 1 year
   - 23 2 1-2 years
   - 3 3-5 years (Table 6.11, page 6.13)
   - 4 over 5 years

2. Prior to this program year what types of contact have you had with handicapped children? (Check all that apply)
   - 24 ____ as a volunteer
   - 25 ____ as a teacher
   - 26 ____ as an aide
   - 27 ____ as a parent
   - 28 ____ as a sibling (N/A)
   - 29,30-31 ____ other (specify) ______________________
   - 32,33-34 ____ other (specify) ______________________
   - 35 ____ none

3. What is the highest level of education you have completed?
   - 1 some high school, but no diploma
   - 2 high school graduate (or GED)
   - 36 3 some college, but no degree (Table 6.13, page 6.16)
   - 4 associate degree
   - 5 bachelor's degree
   - 6 postgraduate study

4. If you are a college graduate, what is your present area of specialization?
   - 1 special education
   - 2 early childhood development (Table 6.14, page 6.17)
   - 37 3 other degree area
   - 4 does not apply

5. Have you received any other formal classroom training that has prepared you to work with preschool children?
   - 1 no
   - 38,39-40 2 yes, I'm a Child Development Associate (or soon will be (Table 6.15, page 6.18)
   - 3 yes, I have other special training ________ (specify)

For Office Use Only

6. Are you certified by your State Department of Education to teach handicapped children?

41

2 no

1 yes (Table 6.16; page 6.19)

7. What do you consider to be your most important training needs at this time? (Check no more than three training areas)

42 ____ knowledge of Head Start performance standards

43 ____ behavior modification/classroom management

44 ____ individualized instructional techniques

45 ____ preparation of individualized learning objectives

46 ____ working with parents

47 ____ strategies for recruitment of handicapped children

48 ____ screening and assessment

49 ____ theory and practice of mainstreaming

50 ____ specific training for a handicapping condition (e.g., blind, deaf)

51 ____ understanding handicapping conditions

52,53-54 ____ other (specify) ____________________

55,56-57 ____ other (specify) ____________________

| H.S. | N.H.S. |
|---|---|
| 35 | 29 |
| 115 | 94 |
| 143 | 57 |
| 97 | 118 |
| 67 | 47 |
| 42 | 40 |
| 88 | 113 |
| 90 | 47 |
| 227 | 152 |
| 175 | 63 |
| 9 | 50 |
| - | 9 |

8. How many children do you have enrolled in your class?

58-60 ☐☐☐ (enter number) (Table 6.9, page 6.11)

8a. Of this number, how many have been identified as handicapped?

61-63 ☐☐☐ (Table 6.8, page 6.10)

8b. Of the handicapped children how many are:

64-66 ☐☐☐ American Indian or Alaskan Native

67-69 ☐☐☐ Asian or Pacific Islander

N/A

70-72 ☐☐☐ Black, not of Hispanic origin

73-75 ☐☐☐ Hispanic

76-78 ☐☐☐ White, not of Hispanic origin

21-22="02"

9. How many paid adult staff (excluding yourself) are generally in your class during the day?

23-25 ☐☐

| | H.S. | N.H.S. |
|---|---|---|
| $\bar{x}$ | 1.743 | 1.37 |

10. How many volunteers are generally in your class during the day?

26-28 ☐

| | H.S. | N.H.S. |
|---|---|---|
| $\bar{x}$ | 2.126 | .892 |

10a. Of this number, how many are parents of handicapped children enrolled?

29-31 ☐☐☐ (N/A)

11. Which of the following represents your salary? (Circle one)

1 $5,000 or less

2 $5,000 to $7,000

32 3 $7,000 to $10,000 (Table 6.12, page 6.15)

4 $10,000 to $12,000

5 Over $12,000

## TEACHER ATTITUDES AND OPINIONS

### TEACHER INTERVIEW

21-22="01" Since this is an opinion scale, the only "right" answers are those that you feel express what you think about mainstreaming and children with handicaps.

All of the items are views with which you may agree or disagree. Mark the number which most accurately describes your feelings and thoughts about each statement.

Strongly Agree — Neutral — Strongly Disagree

23 1. I like to work with handicapped children. 1___ 2___ 3___ 4___ 5___ 6___ 7___

24 2. I feel it is good for the normal children to be in the same classroom as handicapped children. 1___ 2___ 3___ 4___ 5___ 6___ 7___

25 3. Working with handicapped children takes too much classroom time away from normal children. 1___ 2___ 3___ 4___ 5___ 6___ 7___

26 4. I think mainstreaming is harmful to normal children. 1___ 2___ 3___ 4___ 5___ 6___ 7___

27 5. It's hard for me to make handicapped children feel "at home" in my class. 1___ 2___ 3___ 4___ 5___ 6___ 7___

28 6. I feel mainstreaming is harmful to many handicapped children 1___ 2___ 3___ 4___ 5___ 6___ 7___

29 7. For me working with handicapped children and normal children is difficult in a regular classroom setting. 1___ 2___ 3___ 4___ 5___ 6___ 7___

30 8. It seems to me that handicapped children learn more in special classes that do not include normal children. 1___ 2___ 3___ 4___ 5___ 6___ 7___

31 9. I feel that handicapped children need to be made aware of their limitations. 1___ 2___ 3___ 4___ 5___ 6___ 7___

32 10. I am afraid of working with some handicapped children. 1___ 2___ 3___ 4___ 5___ 6___ 7___

33 11. It seems to me that handicapped children tend to "give up" in the regular classroom setting. 1___ 2___ 3___ 4___ 5___ 6___ 7___

34 12. The integration of handicapped children in regular classes slows down the learning of the other children in my class. 1___ 2___ 3___ 4___ 5___ 6___ 7___

35 13. Planning instruction for both handicapped and normal children demands too much additional teacher preparation time. 1___ 2___ 3___ 4___ 5___ 6___ 7___

36 14. I think handicapped children should be mainstreamed, but they should have teachers with more special training than I have. 1___ 2___ 3___ 4___ 5___ 6___ 7___

(See Table 6.19, page 6.24)

| | | | Strongly Agree | | | Neutral | | | Strongly Disagree |
|---|---|---|---|---|---|---|---|---|---|
| 37 | 15. | Handicapped children are more like normal children than they are different. | 1___ | 2___ | 3___ | 4___ | 5___ | 6___ | 7___ |
| 38 | 16. | I think that normal and handicapped children get along well with one another. | 1___ | 2___ | 3___ | 4___ | 5___ | 6___ | 7___ |
| 39 | 17. | It seems to me that handicapped children are withdrawn around the normal children in the class. | 1___ | 2___ | 3___ | 4___ | 5___ | 6___ | 7___ |
| 40 | 18. | I think normal children do not try as hard around handicapped children. | 1___ | 2___ | 3___ | 4___ | 5___ | 6___ | 7___ |
| 41 | 19. | Being in the same class with normal children helps the social development of handicapped children. | 1___ | 2___ | 3___ | 4___ | 5___ | 6___ | 7___ |

**(See Table 6.19, page 6.24)**

# SCHAEFER TEACHER INVENTORY

# SCHAEFER TEACHER INVENTORY I
(general form)

21-22-"01"

Check the number of the response that most closely reflects how you really feel about each statement. There are no right or wrong answers.

| | | | Strongly Disagree | Mildly Disagree | Not Sure | Mildly Agree | Strongly Agree |
|---|---|---|---|---|---|---|---|
| 23 | 1. | Meetings with parents are really not very useful | 1___ | 2___ | 3___ | 4___ | 5___ |
| 24 | 2. | A child's success in learning is influenced more by the home than the Center | 1___ | 2___ | 3___ | 4___ | 5___ |
| 25 | 3. | I know how to conduct a useful parent-teacher conference | 1___ | 2___ | 3___ | 4___ | 5___ |
| 26 | 4. | Parents are good about letting me know that they appreciate my efforts | 1___ | 2___ | 3___ | 4___ | 5___ |
| 27 | 5. | It is hard to face the parents of a child who is doing poorly | 1___ | 2___ | 3___ | 4___ | 5___ |
| 28 | 6. | I do not want to work with parents any more than I already do | 1___ | 2___ | 3___ | 4___ | 5___ |
| 29 | 7. | Conferences with parents sometimes make me uneasy | 1___ | 2___ | 3___ | 4___ | 5___ |
| 30 | 8. | Meetings with parents do not help me achieve my goals for the children | 1___ | 2___ | 3___ | 4___ | 5___ |
| 31 | 9. | The most important part of a child's learning happens at home before she starts in any school | 1___ | 2___ | 3___ | 4___ | 5___ |
| 32 | 10. | I feel comfortable calling parents about any questions I have | 1___ | 2___ | 3___ | 4___ | 5___ |
| 33 | 11. | Most parents seem to appreciate what I do for their children | 1___ | 2___ | 3___ | 4___ | 5___ |
| 34 | 12. | It is unpleasant talking to a parent whose child is not doing as well as he should | 1___ | 2___ | 3___ | 4___ | 5___ |
| 35 | 13. | Working more with parents would interfere too much with my other teaching responsibilities | 1___ | 2___ | 3___ | 4___ | 5___ |

(See Table 6.17, page 6.21)

|  |  |  | Strongly Disagree | Mildly Disagree | Not Sure | Mildly Agree | Strongly Agree |
|---|---|---|---|---|---|---|---|
| 36 | 14. | I feel ill-at-ease when I visit with a child's parents | 1 | 2 | 3 | 4 | 5 |
| 37 | 15. | Meetings with parents are not worth the time they take | 1 | 2 | 3 | 4 | 5 |
| 38 | 16. | Even during a child's school years the most important part of learning takes place at home | 1 | 2 | 3 | 4 | 5 |
| 39 | 17. | When a child comes to the Center with a problem, I feel comfortable talking to the parents | 1 | 2 | 3 | 4 | 5 |
| 40 | 18. | Parents want me to tell them how to help their child learn | 1 | 2 | 3 | 4 | 5 |
| 41 | 19. | It is a strain on me to discuss a child's problems with his parents | 1 | 2 | 3 | 4 | 5 |
| 42 | 20. | Working with parents is too much to expect from the classroom teacher | 1 | 2 | 3 | 4 | 5 |
| 43 | 21. | I get tense when I have to talk to a parent about a child | 1 | 2 | 3 | 4 | 5 |

(See Table 6.17, page 6.21)

(educational beliefs)

| | | | Strongly Disagree | Mildly Disagree | Not Sure | Mildly Agree | Strongly Agree |
|---|---|---|---|---|---|---|---|
| 44 | 1. | The most important thing to teach children is absolute obedience to parents | 1 ___ | 2 ___ | 3 ___ | 4 ___ | 5 ___ |
| 45 | 2. | Although adults may have difficulty accepting them, all children are basically good at heart | 1 ___ | 2 ___ | 3 ___ | 4 ___ | 5 ___ |
| 46 | 3. | Basically, children learn by being told about the world | 1 ___ | 2 ___ | 3 ___ | 4 ___ | 5 ___ |
| 47 | 4. | Teachers should show the same amount of affection to all their children | 1 ___ | 2 ___ | 3 ___ | 4 ___ | 5 ___ |
| 48 | 5. | Children will get on any woman's nerves if she has to be with them all day | 1 ___ | 2 ___ | 3 ___ | 4 ___ | 5 ___ |
| 49 | 6. | The most important thing to teach children is absolute obedience to whoever is in authority | 1 ___ | 2 ___ | 3 ___ | 4 ___ | 5 ___ |
| 50 | 7. | Children should always obey their parents | 1 ___ | 2 ___ | 3 ___ | 4 ___ | 5 ___ |
| 51 | 8. | All children are good by nature | 1 ___ | 2 ___ | 3 ___ | 4 ___ | 5 ___ |
| 52 | 9. | Children's learning results mainly from being presented basic information again and again | 1 ___ | 2 ___ | 3 ___ | 4 ___ | 5 ___ |
| 53 | 10. | Teachers should give all children an equal amount of praise | 1 ___ | 2 ___ | 3 ___ | 4 ___ | 5 ___ |
| 54 | 11. | Mothers very often feel that they can't stand their children a moment longer | 1 ___ | 2 ___ | 3 ___ | 4 ___ | 5 ___ |
| 55 | 12. | Children should always obey the teacher | 1 ___ | 2 ___ | 3 ___ | 4 ___ | 5 ___ |
| 56 | 13. | Children should not question the authority of their parents | 1 ___ | 2 ___ | 3 ___ | 4 ___ | 5 ___ |

(See Table 6.17, page 6.21)

| | | | Strongly Disagree | Mildly Disagree | Not Sure | Mildly Agree | Strongly Agree |
|---|---|---|---|---|---|---|---|
| 57 | 14. | Children are born good; it is society that turns some children into troublemakers | 1 | 2 | 3 | 4 | [illegible] |
| 58 | 15. | A child learns primarily by absorbing knowledge she is given by others | 1 | 2 | 3 | 4 | 5 |
| 59 | 16. | Teachers should discipline all the children the same | 1 | 2 | 3 | 4 | 5 |
| 60 | 17. | Raising children is a nerve-racking job | 1 | 2 | 3 | 4 | [illegible] |
| 61 | 18. | Children should not question the authority of the teacher | 1 | 2 | 3 | 4 | [illegible] |
| 62 | 19. | Children should always do what their parents say, no matter what | 1 | 2 | 3 | 4 | [illegible] |
| 63 | 20. | In order to be fair, a teacher must treat all children alike | 1 | 2 | 3 | 4 | 5 |
| 64 | 21. | Children should always do what the teacher says, no matter what | 1 | 2 | 3 | 4 | 5 |
| 65 | 22. | Children should be treated the same regardless of differences among them | 1 | 2 | 3 | 4 | 5 |

(See Table 6.17, page 6.21)

# SCHAEFER TEACHER PERCEPTION OF THE ENVIRONMENT INVENTORY

L.23

## SHAEFER TEACHER PERCEPTION OF CENTER ENVIRONMENT

21-22="01"

Mark the number of the response that most closely reflects how you really feel about each statement. There are no right or wrong answers.

| | | | | Strongly Disagree | Mildly Disagree | Not Sure | Mildly Agree | Strongly Agree |
|---|---|---|---|---|---|---|---|---|
| 23 | I. | 1. | My ideas are generally supported by other staff members | 1___ | 2___ | 3___ | 4___ | 5___ |
| 24 | | 2. | Fellow staff members encourage me with my work | 1___ | 2___ | 3___ | 4___ | 5___ |
| 25 | | 3. | The staff would provide support if things didn't go well | 1___ | 2___ | 3___ | 4___ | 5___ |
| 26 | II. | 1. | The staff is warm and friendly | 1___ | 2___ | 3___ | 4___ | 5___ |
| 27 | | 2. | Staff members make me feel that I can confide in them | 1___ | 2___ | 3___ | 4___ | 5___ |
| 28 | | 3. | The friendliness of the staff is a benefit in this job | 1___ | 2___ | 3___ | 4___ | 5___ |
| 29 | III. | 1. | The director encourages me to involve parents in their child's education | 1___ | 2___ | 3___ | 4___ | 5___ |
| 30 | | 2. | The director would support my attempts to involve parents in their child's education | 1___ | 2___ | 3___ | 4___ | 5___ |
| 31 | | 3. | Center policies favor teachers' efforts to involve parents in their child's education | 1___ | 2___ | 3___ | 4___ | 5___ |
| 32 | IV. | 1. | The director encourages parents to take the initiative in contacting teachers | 1___ | 2___ | 3___ | 4___ | 5___ |
| 33 | | 2. | The director makes parents feel free to contact their child's teacher | 1___ | 2___ | 3___ | 4___ | 5___ |
| 34 | | 3. | The Center director supports parents contacting teachers for any reason | 1___ | 2___ | 3___ | 4___ | 5___ |

(See Table 6.18, page 6.23)

|  |  |  |  | Strongly Disagree | Mildly Disagree | Not Sure | Mildly Agree | Strongly Agree |
|---|---|---|---|---|---|---|---|---|
| 35 | V. | 1. | The Center provides me opportunities for discussion with other teachers | 1___ | 2___ | 3___ | 4___ | 5___ |
| 36 |  | 2. | There is ample opportunity scheduled for me to talk with the other teachers | 1___ | 2___ | 3___ | 4___ | 5___ |
| 37 |  | 3. | I have enough time during working hours to talk with other teachers about important matters | 1___ | 2___ | 3___ | 4___ | 5___ |
| 38 | VI. | 1. | In matters of importance the teachers' point of view is considered by the director in making decisions | 1___ | 2___ | 3___ | 4___ | 5___ |
| 39 |  | 2. | What teachers think helps determine Center decisions | 1___ | 2___ | 3___ | 4___ | 5___ |
| 40 |  | 3. | Teacher input is considered an important part of the decision making process in this Center | 1___ | 2___ | 3___ | 4___ | 5___ |
| 41 | VII. | 1. | Rules important to Center functioning are arrived at together by the teachers, the director, and the parent policy committee | 1___ | 2___ | 3___ | 4___ | 5___ |
| 42 |  | 2. | Basic Center rules are arrived at through joint teacher-director-parent policy committee decisions | 1___ | 2___ | 3___ | 4___ | 5___ |
| 43 |  | 3. | Rules are decided upon through a majority decision by the director, parent policy committee and teachers | 1___ | 2___ | 3___ | 4___ | 5___ |
| 44 | VIII. | 1. | My suggestions seldom are accepted by colleagues | 1___ | 2___ | 3___ | 4___ | 5___ |
| 45 |  | 2. | I have little voice in decision making in this school | 1___ | 2___ | 3___ | 4___ | 5___ |
| 46 |  | 3. | I have little hope in making changes in this school | 1___ | 2___ | 3___ | 4___ | 5___ |

(See Table 6.18, page 6.23)

|  |  |  |  | Strongly Disagree | Mildly Disagree | Not Sure | Mildly Agree | Strongly Ag |
|---|---|---|---|---|---|---|---|---|
| 47 | IX. | 1. | The director gives frequent feedback about my work | 1___ | 2___ | 3___ | 4___ | 5___ |
| 48 |  | 2. | The director takes time regularly to provide feedback about teaching skills | 1___ | 2___ | 3___ | 4___ | 5___ |
| 49 |  | 3. | Helpful suggestions are given to teachers by the director | 1___ | 2___ | 3___ | 4___ | 5___ |
| 50 | X. | 1. | Teachers are given help in improving skills they feel they need | 1___ | 2___ | 3___ | 4___ | 5___ |
| 51 |  | 2. | Help is provided to a teacher in areas she feels she needs to work on | 1___ | 2___ | 3___ | 4___ | 5___ |
| 52 |  | 3. | The teachers in this Center are given help in correcting their weaknesses | 1___ | 2___ | 3___ | 4___ | 5___ |
| 53 | XI. | 1. | Teachers in this Center help one another with their classroom problems | 1___ | 2___ | 3___ | 4___ | 5___ |
| 54 |  | 2. | The teaching staff in this Center provides each other with mutual assistance for working on problem areas | 1___ | 2___ | 3___ | 4___ | 5___ |
| 55 |  | 3. | Teachers are happy to share their skills with one another | 1___ | 2___ | 3___ | 4___ | 5___ |

(See Table 6.18, page 6.23)

XII. Please rank these job factors which might help to keep you in teaching. Rank them in the order of importance to you from greatest (1) to least (6), using the numbers 1-6.

56 Money, job security and possible promotions _____

57 The Center director's and parent policy committee's commitment to the education of children _____

58 Personal satisfaction gained from teaching _____

59 Interest of the director in the welfare of children _____

60 Good benefits and long vacations _____

61 The feeling that I can make a difference in the lives of the children _____

| H.S |  |  |  |  |  | N.H.S |  |  |  |  |  |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 1 | 2 | 3 | 4 | 5 | 6 |
| 69 | 35 | 86 | 66 | 129 | 62 | 47 | 30 | 78 | 33 | 108 | 55 |
| 16 | 58 | 119 | 137 | 62 | 37 | 20 | 32 | 78 | 108 | 89 | 26 |
| 99 | 173 | 78 | 76 | 13 | 6 | 113 | 135 | 56 | 6 | 9 | 12 |
| 16 | 55 | 92 | 101 | 123 | 40 | 5 | 21 | 76 | 112 | 56 | 81 |
| 8 | 9 | 26 | 38 | 72 | 274 | 6 | - | 37 | 64 | 76 | 170 |
| 240 | 108 | 40 | 20 | 13 | 8 | 158 | 111 | 36 | 26 | 13 | 7 |

# HIGH SCOPE HOME ENVIRONMENT SCALE

# HIGH/SCOPE HOME ENVIRONMENT SCALE

22 = "01"

I WOULD LIKE TO ASK YOU SOME QUESTIONS ABOUT THE ACTIVITIES THAT ______________ (Child's Name) DOES FROM DAY TO DAY. SOME OF THE QUESTIONS ARE ABOUT THINGS HE (SHE) PLAYS WITH, AND SOME ARE ABOUT THINGS THAT YOU DO TOGETHER. THE QUESTIONS WILL HELP US TO UNDERSTAND MORE ABOUT WHAT CONDITIONS ARE BEST FOR A YOUNG CHILD AS HE (SHE) GROWS.

23

1. HOW MANY CHILDREN'S BOOKS ARE IN YOUR HOME THAT ______________ (Child's Name) CAN LOOK AT?

Would you say: 3 fifteen or more
or: 2 several, but not fifteen
or: 1 three or fewer

| | H.S. | N.H.S. | N.S. |
|---|---|---|---|
| 3 | 218 | 231 | 23 |
| 2 | 122 | 82 | 60 |
| 1 | 87 | 39 | 71 |

24

2. HOW OFTEN WOULD YOU SAY SOMEONE READS STORIES TO ______________ (Child's Name)?

Would you say: 3 almost every day
or: 2 several times a week
or: 1 not that often?

| | H.S. | N.H.S. | N.S. |
|---|---|---|---|
| 3 | 151 | 119 | 57 |
| 2 | 138 | 122 | 46 |
| 1 | 133 | 111 | 51 |

25

3. HOW OFTEN DO YOU AND ______________ (Child's Name) TALK ABOUT THE PICTURES HE (SHE) MAKES, WHAT HE (SHE) DOES DURING THE DAY, HIS (HER) FRIENDS, AND SO ON?

Would you say: 3 for about a half-hour or more every day
or: 2 for a few minutes every day
or: 1 several times a week or less?

| | H.S. | N.H.S. | N.S. |
|---|---|---|---|
| 3 | 134 | 144 | 35 |
| 2 | 226 | 144 | 64 |
| 1 | 67 | 64 | 55 |

26

4. HOW OFTEN DO YOU LET ______________ (Child's Name) HELP YOU WHILE YOU ARE COOKING, CLEANING THE HOUSE, WASHING DISHES, OR DOING OTHER HOUSEHOLD TASKS?

Would you say: ___ almost every day
or: 2 several times a week
or: 1 not that often?

| | H.S. | N.H.S. | N.S. |
|---|---|---|---|
| 3 | 189 | 157 | 58 |
| 2 | 98 | 78 | 35 |
| 1 | 140 | 117 | 61 |

5. I'M GOING TO READ A LIST OF HOUSEHOLD TASKS THAT CHILDREN SOMETIMES HELP WITH. PLEASE TELL ME WHICH OF THEM ______________ HAS HELPED YOU WITH IN THE LAST MONTH.
(Child's Name)

| | Yes | No | |
|---|---|---|---|
| 27 | 1 | 0 | clean or peel food for a meal |
| 28 | 1 | 0 | mix or bake things, like cookies |
| 29 | 1 | 0 | stir things while they cook, like soup, pudding, or jello |
| 30 | 1 | 0 | find food on shelves at the grocery store for you |
| 31 | 1 | 0 | take off the dishes after meals |
| 32 | 1 | 0 | put clean clothes into the right drawers or shelves |

| H.S. | N.H.S. | E.S. |
|---|---|---|
| 116 | 65 | 25 |
| 141 | 126 | 39 |
| 120 | 106 | 34 |
| 287 | 155 | 68 |
| 315 | 201 | 77 |
| 262 | 145 | 58 |

6. HOW OFTEN DO YOU JOIN IN THE PLAY ACTIVITIES THAT ______________ IS INVOLVED IN, SUCH AS PLAYING GAMES, DRAWING PICTURES, OR SINGING?
(Child's Name)

33

Would you say: 3 almost every day
or: 2 once a week or so
or: 1 not that often?

| | H.S. | N.H.S. | E.S. |
|---|---|---|---|
| 3 | 240 | 245 | 97 |
| 2 | 121 | 58 | 34 |
| 1 | 66 | 49 | 23 |

7. HOW MUCH TIME DOES ______________ WATCH TELEVISION?
(Child's Name)

34

Would you say: 3 about 2 hours a day or more
or: 2 every day but not for two hours
or: 1 several times a week or less?

| | H.S. | N.H.S. | E.S. |
|---|---|---|---|
| 3 | 244 | 138 | 25 |
| 2 | 115 | 138 | [illegible] |
| 1 | 68 | 76 | [illegible] |

8. HOW OFTEN DO YOU TALK WITH ______________ ABOUT HIS (HER) FEELINGS TOWARDS THINGS, SUCH AS HIS (HER) FEARS, PEOPLE OR THINGS HE (SHE) ESPECIALLY LIKES, OR PEOPLE OR THINGS HE (SHE) ESPECIALLY DOESN'T LIKE?
(Child's Name)

35

Would you say: 3 almost every day
or: 2 several times a week
or: 1 not that often?

| | H.S. | N.H.S. | E.S. |
|---|---|---|---|
| 3 | 173 | 142 | 75 |
| 2 | 104 | 67 | 31 |
| 1 | 150 | 143 | 68 |

**9.** I AM GOING TO READ TO YOU A LIST OF THINGS CHILDREN CAN PLAY WITH. PLEASE TELL ME WHICH ONES ______________ HAS A CHANCE TO PLAY WITH AT HOME.
(Child's Name)

**Check "yes" only if item is presently available in home.**

| | H.S. | N.H.S. | N.S. |
|---|---|---|---|
| | 403 | 322 | 137 |
| | 279 | 206 | 68 |
| | 278 | 239 | 65 |
| | 254 | 245 | 87 |
| | 352 | 273 | 121 |
| | 203 | 205 | 60 |
| | 194 | 163 | 50 |
| | 279 | 261 | 110 |
| | 171 | 120 | 46 |
| | 215 | 168 | 51 |
| | 229 | 194 | 67 |
| | 101 | 72 | 19 |

| | Yes | No | |
|---|---|---|---|
| 36 | [✓ 1] | 0 | crayons and paper |
| 37 | 1 | 0 | scissors |
| 38 | 1 | 0 | scotch tape, paste, or stapler |
| 39 | 1 | 0 | jigsaw puzzles |
| 40 | [✓ 1] | 0 | old picture catalogs to read,and cut up, like Sears, Wards, or others |
| 41 | 1 | 0 | paint or magic markers |
| 42 | [✓ 1] | 0 | clay or playdough |
| 43 | 1 | 0 | "put-together" toys like tinkertoys, Legos, pegboards, or beads for stringing |
| 44 | 1 | 0 | hammer and nails with some wood scraps |
| 45 | 1 | 0 | yarn, thread, and cloth scraps for knitting or sewing |
| 46 | 1 | 0 | make believe toys out of milk cartons, tin cans, or egg cartons |
| 47 | [✓ 1] | 0 | plants of his (her) own in a pot or garden |

**10.** HOW OFTEN DO YOU PLAY "HOUSE", "STORE", "DOCTOR", OR OTHER MAKE-BELIEVE GAMES WITH ______________ ?
(Child's Name)

48

| | | | | H.S. | N.H.S. | N.S. |
|---|---|---|---|---|---|---|
| Would you say: | 3 | almost every day | | | | |
| or: | 2 | several times a week | 3 | 51 | 51 | 20 |
| or: | 1 | not that often? | 2 | 99 | 72 | 34 |
| | | | 1 | 277 | 229 | 100 |

**11.** NOW I'M GOING TO READ A LIST OF THINGS CHILDREN START TO LEARN AS THEY GROW TO BE SCHOOL AGE. PLEASE TELL ME WHICH OF THEM YOU HAVE TRIED TO TEACH ______________ IN THE PAST MONTH.
(Child's Name)

**If reply is "already knows," probe for "in the past month." If someone other than focal parent taught child, score "no."**

| | Already Knows | Yes | No | |
|---|---|---|---|---|
| 49 | [✓ 1] | 1 | 0 | nursery rhymes, prayers, or songs |
| 50 | 1 | 1 | 0 | colors |
| 51 | 1 | 1 | 0 | shapes, such as circles, squares, or triangles |
| 52 | [✓ 1] | 1 | 0 | to write his (her) name |
| 53 | [✓ 1] | 1 | 0 | to remember his (her) address and telephone number |
| 54 | 1 | 1 | 0 | to count things |
| 55 | 1 | 1 | 0 | to recognize numbers in books |
| 56 | 1 | 1 | 0 | to say the "abc's" |
| 57 | [✓ 1] | 1 | 0 | to recognize letters in books |
| 58 | 1 | 1 | 0 | to read words on signs or in books |
| 59 | [✓ 1] | 1 | 0 | ideas like "big-little", "up-down", "before-after", and so on |

| H.S. | N.H.S. | N.S. |
|---|---|---|
| 362 | 271 | 120 |
| 381 | 262 | 124 |
| 288 | 228 | 84 |
| 245 | 138 | 64 |
| 185 | 81 | 45 |
| 395 | 277 | 128 |
| 250 | 159 | 52 |
| 284 | 193 | 102 |
| 202 | 124 | 39 |
| 125 | 73 | 28 |
| 327 | 257 | 90 |

**Be sure to record time finished**

# PARENT INTERVIEW SCHEDULE
# (FALL)

## PARENT'S INTERVIEW SCHEDULE - PART I

21-22 = "01"

1. Do you have any other children? (Circle response given)

23

(2) no

[illegible]-25

(1) yes

↳ How many? ☐☐ (enter number)

| | H.S. | N.H.S. | N.S. |
|---|---|---|---|
| 2 | 70 | 75 | 29 |
| 1 | 357 | 277 | 125 |

2. Do any of these other children have handicaps or special learning problems? (Circle response given)

(2) no

(1) yes

| | H.S. | N.H.S. | N.S. |
|---|---|---|---|
| 2 | 245 | 223 | 86 |
| 1 | 112 | 54 | 39 |

3. Is this child: (circle one)

1 First Born 3 Only Child

2 Last Born 4 Other

| | H.S. | N.H.S. | N.S. |
|---|---|---|---|
| 1 | 138 | 104 | 37 |
| 2 | 165 | 105 | 71 |
| 3 | 26 | 33 | 14 |
| 4 | 99 | 65 | 32 |

4. Does your child receive any special services other than those provided by ________________ (name of program).

28

(2) no

(1) yes

| | H.S. | N.H.S. | N.S. |
|---|---|---|---|
| 2 | 285 | 254 | 99 |
| 1 | 142 | 98 | 54 |

↳ What kind of services?

29-30 N/A

31-32 N/A

33-34 N/A

(Interviewer: Record verbatim. Answers will be coded at a later date

5. Was your child ever enrolled in another program similar to the one s/he is currently enrolled in?

35 2 no

1 yes

|  | H.S. | N.H.S. |
|---|---|---|
| 2 | 322 | 241 |
| 1 | 105 | 111 |

5a. What kind of program was it?

36 1 Home-based, Head Start

37, 38-39 2 Home-based, Other ____________

40 3 Infant stimulation program

41 4 Easter Seal Treatment Center

42 5 Association for Retarded Children (center-based)

43 6 BEH First Chance Project

44 7 Public School Preschool (center-based)

45, 46-47 8 Other, specify ____________

| H.S. | N.H.S. |
|---|---|
| 7 | 7 |
| 4 | 10 |
| 4 | 7 |
| 4 | 18 |
| 6 | 10 |
| 6 | 4 |
| - | 1 |
| 8 | 2 |
| 72 | 67 |

5b. How many years was your child enrolled? (Total time in all previous programs)

48 1 less than 1 year

2 1 year

3 2 years

4 3 years or more

|  | H.S. | N.H.S. |
|---|---|---|
| 1 | 36 | 40 |
| 2 | 35 | 32 |
| 3 | 23 | 26 |
| 4 | 11 | 14 |

6. Do you participate in activities sponsored by your child's program?

49 2 no

1 yes

|  | H.S. | N.H.S. |
|---|---|---|
| 2 | 149 | 115 |
| 1 | 278 | 237 |

6a. How often are you involved?

50 1 1-3 hours a month

2 2-3 hours a week

3 4 or more hours a week

|  | H.S. | N.H.S. |
|---|---|---|
| 1 | 160 | 142 |
| 2 | 69 | 64 |
| 3 | 49 | 31 |

6b. What kinds of activities are you involved in? (Check all that app[illegible]

51 ___ provide transportation for my child or other children

52 ___ train or counsel other parents (i.e., a parent trained in a ski[illegible] shares that skill with other parents)

53 ___ involved in outreach and recruitment of other handicapped children

54 ___ involved in developing a community resource file

55 ___ helped develop goals for social services and parent involvement activities

56 ___ function as a contact between my child's program and other serv[illegible]e agency(ies)

57 ___ contributed by making or donating materials for the classroom

58 ___ involved in functions with parents of other normal Head Start children (social functions, class functions, etc.)

59 ___ other (specify) ____________

60 ___ other (specify) ____________

| H.S. | N.H.S. |
|---|---|
| 56 | 87 |
| 20 | 16 |
| 17 | 14 |
| 7 | 5 |
| 34 | 31 |
| 22 | 15 |
| 109 | 66 |
| 169 | 54 |
| 140 | 142 |
| 27 | 28 |

7. How often do you talk to your child's teacher or the program director about your child? (Interviewer: Code response below)

1 at least weekly

61 2 2-3 times a month

3 monthly

4 several times a year

5 rarely or never

|  | H.S. | N.H.S. |
|---|---|---|
| 1 | 213 | 181 |
| 2 | 87 | 78 |
| 3 | 65 | 44 |
| 4 | 25 | 38 |
| 5 | 37 | 11 |

8. How important do you think it is for your child to be in a special program designed to meet his/her special needs? (Interviewer: Make certain the respondent understands the intent of this question)

1 Very important

62 2 Somewhat important

3 I don't know

4 Somewhat unimportant

5 Very unimportant

|  | H.S. | N.H.S. |
|---|---|---|
| 1 | 307 | 302 |
| 2 | 20 | 14 |
| 3 | 22 | 7 |
| 4 | 23 | - |
| 5 | 55 | 29 |

9. Do you think the program your child is currently in is the best program for him/her?

63 2 no

1 yes

|  | H.S. | N.H.S. |
|---|---|---|
| 2 | 34 | 25 |
| 1 | 393 | 327 |

9a. What program do you think would be best?

64-65 N/A

66-67 N/A

(Interviewer: Write in verbatim)

10. Do you think your child will benefit from the program he/she is in this year? (Interviewer: Benefit may be defined in terms of increased learning, better social skills, and/or enhanced self-help skills)

4 I don't know

68 3 no

2 yes, but only a little

1 yes, he/she will benefit greatly

|  | H.S. | N.H.S. |
|---|---|---|
| 1 | 386 | 317 |
| 2 | 32 | 24 |
| 3 | 1 | 3 |
| 4 | 9 | 8 |

11. Where do you expect your child to be enrolled in school next year?

69 1 Public school

70 2 Head Start

71, 72-73 3 Private school (specify) ____________

74, 75-76 4 Other (specify) N/A

7 5 No program

| H.S. | N.H.S |
|---|---|
| 259 | 118 |
| 117 | 12 |
| 10 | 21 |
| 39 | 199 |
| 1 | 2 |

21-22 = "02"

Now I'd like to ask you some general questions about yourself. This information will be kept strictly confidential and will not be told to anyone. You do not have to answer any of these questions, but it would help us in the study if you would answer them. Thank you.

12. What is the highest level of education you have completed? (Interviewer: Code response below)

23

1 less than high school

2 high school graduate

3 some college, but not a 4-year degree (Table 5.4, page 5.8)

4 college graduate

5 postgraduate study/degree

12a. Your spouse?

24 ☐ (Interviewer: Enter code from #12) (Table 5.5, page 5.9)

25-26 13. What is your occupation?

____________________ (Interviewer: Record verbatim)

27-28 13a. What do you do in your job? (Table 5.3, page 5.5)

____________________ (Interviewer: Record verbatim)

29-30 14. What is your spouse's occupation?

____________________ (Interviewer: Record verbatim)

31-32 14a. What does your spouse do in his/her job? (Table 5.3, page 5.6)

____________________ (Interviewer: Record verbatim)

15. Here is a card showing income groups (Interviewer: Hand card to parent) Tell me the number of the group which represents your family's total annual income, before taxes.

1 Under $5,000

33

2 $5,000 - $10,000 N/A (income categories changed on posttest data forms)

3 $10,000 - $15,000

4 Over $15,000

## PARENT'S INTERVIEW SCHEDULE - PART II
(For Mainstreaming Classes Only)

| | | | Yes | Can't Say | No |
|---|---|---|---|---|---|
| 34 | 1 | I feel my child could do better in a more specialized program for her/his type of handicap. | 1 | 2 | 3 |
| 35 | 2 | I think other children don't like to be in the same class with handicapped children. | 1 | 2 | 3 |
| 36 | 3 | I think my child gets along better at home since she/he has been in school with children who don't have handicaps. | 3 | 2 | 1 |
| 37 | 4 | I think it's best for handicapped children to be in a classroom with children who don't have handicaps. | 3 | 2 | 1 |
| 38 | 5 | I think my child would have more friends if she/he were in a class of children with similar handicaps. | 1 | 2 | 3 |
| 39 | 6 | I think that handicapped children in classes with other children get along better with other people. | 3 | 2 | 1 |
| 40 | 7 | Handicapped children are more like other children than different. | 3 | 2 | 1 |
| 41 | 8 | I think my child is afraid to try when she/he is competing with other children. | 1 | 2 | 3 |
| 42 | 9 | I think children without handicaps are less likely to make fun of handicapped children if they're in the same class together. | 3 | 2 | 1 |

(Table 5.9, page 5.18)

# SCHAEFER PARENT INVENTORY I

## SHAEFER PARENT INVENTORY I

Check the number of the response that most closely reflects how you really feel about each statement. There are no right or wrong answers.

| | | Strongly Disagree | Mildly Disagree | Not Sure | Mildly Agree | Strongly Agree | 21-22"01" |
|---|---|---|---|---|---|---|---|
| 1. | Parents can do much about Center policies and practices. | 1___ | 2___ | 3___ | 4___ | 5___ | 23 |
| 2. | I am eager to have the teacher's ideas about how I can work with my child. | 1___ | 2___ | 3___ | 4___ | 5___ | 24 |
| 3. | Parents cannot do much to change what happens in my child's classroom. | 1___ | 2___ | 3___ | 4___ | 5___ | 25 |
| 4. | I want the teacher to tell me how to help my child learn. | 1___ | 2___ | 3___ | 4___ | 5___ | 26 |
| 5. | There is not much hope that parents can have a meaningful effect on the center. | 1___ | 2___ | 3___ | 4___ | 5___ | 27 |
| 6. | I want the teacher to help me to do a better job of teaching my child at home. | 1___ | 2___ | 3___ | 4___ | 5___ | 28 |

(See Table 5.10, page 5.21)

|  | (educational beliefs) | Strongly Disagree | Mildly Disagree | Not Sure | Mildly Agree | Strongly Agree |  |
|---|---|---|---|---|---|---|---|
| 1. | The most important thing to teach children is absolute obedience to parents | 1__ | 2__ | 3__ | 4__ | 5__ | 29 |
| 2. | Although adults may have difficulty accepting them, all children are basically good at heart | 1__ | 2__ | 3__ | 4__ | 5__ | 30 |
| 3. | Teachers should show the same amount of affection to all the children | 1__ | 2__ | 3__ | 4__ | 5__ | 31 |
| 4. | The most important thing to teach children is absolute obedience to whoever is in authority | 1__ | 2__ | 3__ | 4__ | 5__ | 32 |
| 5. | A child learns best by doing things himself rather than listening to others | 1__ | 2__ | 3__ | 4__ | 5__ | 33 |
| 6. | One of the worst things about taking care of children is that a woman feels that she can't get out | 1__ | 2__ | 3__ | 4__ | 5__ | 34 |
| 7. | Children should always obey their parents | 1__ | 2__ | 3__ | 4__ | 5__ | 35 |
| 8. | All children are good by nature | 1__ | 2__ | 3__ | 4__ | 5__ | 36 |
| 9. | Teachers should give all children an equal amount of praise | 1__ | 2__ | 3__ | 4__ | 5__ | 37 |
| 10. | Children should always obey the teacher | 1__ | 2__ | 3__ | 4__ | 5__ | 38 |
| 11. | Basically, a child learns by exploring the world around them | 1__ | 2__ | 3__ | 4__ | 5__ | 39 |
| 12. | Most mothers are bothered more by the feeling of being shut up in the home than by anything else | 1__ | 2__ | 3__ | 4__ | 5__ | 40 |
| 13. | Children should not question the authority of their parents | 1__ | 2__ | 3__ | 4__ | 5__ | 41 |
| 14. | Children are born good; it is society that turns some children into troublemakers | 1__ | 2__ | 3__ | 4__ | 5__ | 42 |

**(See Table 5.10, page 5.21)**

L.40

|  |  | Strongly Disagree | Mildly Disagree | Not Sure | Mildly Agree | Strongly Agree |  |
|---|---|---|---|---|---|---|---|
| 15. | Teachers should discipline all the children the same | 1___ | 2___ | 3___ | 4___ | 5___ | 43 |
| 16. | Children should not question the authority of the teacher | 1___ | 2___ | 3___ | 4___ | 5___ | 44 |
| 17. | Children are naturally curious and will learn well unless barriers are placed in their way | 1___ | 2___ | 3___ | 4___ | 5___ | 45 |
| 18. | One of the bad things about raising children is that you don't have much free time to do just as you like | 1___ | 2___ | 3___ | 4___ | 5___ | 46 |
| 19. | Children should always do what their parents say, no matter what | 1___ | 2___ | 3___ | 4___ | 5___ | 47 |
| 20. | In order to be fair, a teacher must treat all children alike | 1___ | 2___ | 3___ | 4___ | 5___ | 48 |
| 21. | Children should always do what the teacher says, no matter what | 1___ | 2___ | 3___ | 4___ | 5___ | 49 |
| 22. | A mother feels "held down" because she is missing out on things while she stays at home with her children | 1___ | 2___ | 3___ | 4___ | 5___ | 50 |
| 23. | Children should be treated the same regardless of differences among them | 1___ | 2___ | 3___ | 4___ | 5___ | 51 |

(See Table 5.10, page 5.21)

# PRESCOTT-SRI CHILD OBSERVATION SYSTEM

## SUMMARY CODES

## SUMMARY CODING

Field Question

26-27 A1. **PROGRAM STRUCTURE**

1. Free Choice
2. Routines of the Center: snack, cleanup, toileting, transition
3. Teacher-directed individual activity
4. Teacher-directed group activity
5. No code applies for 75% (15 minutes) of the observation period

(See Table E.4)

28-29 B1. **PARTICIPATION/INVOLVEMENT**

1. Consistently uninvolved, predominantly listless, apathetic behavior; generally outside activities, a non-participant.
2. Often uninvolved, seldom participates in activities; seems disinterested, interest level minimal.
3. Sometimes outside activities; not highly involved but generally participating.
4. Generally interested and attentive to activities; majority of the observation period.
5. Consistently involved, engrossed and/or highly interested in activities.

(See Table E.4)

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30-31 C1. **DOMINANCE/SUBMISSIVENESS**

1. Submits to other children, consistently follows along and rarely asserts self.
2. Generally submits to other children, and occasionally states interests but does not maintain position.
3. Interacts as equals with other children, asserts wants and accepts others' ideas.
4. Generally dominant, sometimes accepts other children's ideas, exerts leadership.
5. Consistently dominates other children and groups.
6. Interactions with other children are rare or did not occur in this observation period.

(See Table E.4)

32-33 D1. **LEVEL OF INTERACTION WITH ADULTS**

1. Generally avoids adults, stays on outside of groups where adult is present, does not attend when approached, ignores adults.
2. Sometimes avoids or ignores adults, generally attends and/or responds appropriately to adult approaches.
3. Normal interaction level: neither constantly seeks out adults, nor ignores adults, always attends when adults initiate interaction.
4. Sometimes follows adults, seeks out adults for comfort/praise/attention.
5. Clings to adults, seeks attention, praise, help or comfort for much of the observation period.
6. Unable to make a judgment due to lack of adult availability or adult initiation of interactions.

(See Table E.4)

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34-35 E1. **AFFECT**

1. Considerably distressed, extended crying or general overt unhappiness.
2. Moderately distressed or unhappy, somber mood with little or no positive emotion.
3. Generally neutral tone, minimal distress.
4. Positive affective tone, moderate pleasure.
5. Great pleasure, generally highly enthusiastic, smiles, laughs.

(See Table E.4)

36-37 F1. **HOSTILITY**

1. No hostile acts
2. Occasional hostile acts
3. Frequent hostile acts

| Field | Question | |
|---|---|---|
| 38-39 | G1. INVOLVEMENT WITH OTHER CHILDREN<br>1. General avoidance of other children, ignores others when approached.<br>2. Alone most of the period, responds when approached.<br>3. Sometimes with other children, and sometimes alone, appears comfortable in either situation.<br>4. Interacts comfortably with other children the majority of the period.<br>5. Constantly seeks acceptance, clings to other children. | (See Table E.4) |
| 40-41 | H1. INVOLVEMENT WITH OTHER HANDICAPPED CHILDREN<br>1. No other handicapped children in the classroom.<br>2. Interacts almost exclusively with non-handicapped children even though other handicapped children are available.<br>3. Appears comfortable interacting with either handicapped or non-handicapped children.<br>4. Seems to prefer to interact with other handicapped children, but will interact with non-handicapped children if approached.<br>5. Interacts exclusively with other handicapped children.<br>6. No interaction. | (See Table E.4) |
| 42-43 | I1. ETHNIC ORIGIN<br>1. American Indian or Alaskan Native.<br>2. Asian or Pacific Islander.<br>3. Black, not of Hispanic Origin.<br>4. Hispanic.<br>5. White, not of Hispanic origin. | (See Tables 4.7 and 4.8) |
| 44-45 | J1. CHOICE PERMITTED CHILDREN IN THE INITIATION AND TERMINATION OF ACTIVITIES.<br>1. In general, children have a great deal of freedom in selecting and terminating activities.<br>2. Children have some freedom in selecting and terminating activities.<br>3. Although children were sometimes permitted to choose or terminate activities, there was an equal amount of structure imposed by the teacher.<br>4. In general children were involved mostly in activities which were teacher directed and/or initiated.<br>5. Children were only involved in activities which were teacher directed and/or initiated. | N/A |
| 46-47 | K1. Teacher Code 1-10. | |

# ALPERN-BOLL DEVELOPMENTAL PROFILE
## (TEACHER FORM)

L.4534

## Directions

This revised form of the Developmental Profile is designed to provide information of a child's development in five broad areas: Physical, Self-Help, Social, Academic, and Communication. The results are not absolutes, but can be interpreted as reasonable indicators. Age in each of the five areas are expressed in months, i.e., 36 months instead of 3 years, or 52 months instead of 4 years, 4 months.

To administer, begin with Scale 1, Item 1 (I-1) of the Profile. The question can be answered by a "yes" or "no". Circle the number in the "yes" column if the child can do or does what it says. Circle the number in the "no" column if the child cannot. Continue this procedure until you have obtained 6 consecutive "no" responses. Stop! Go to Scale II, Item 1 (II-1) and begin, continue until you have 6 consecutive "no" answers. Continue this procedure through Scale V.

If you are not sure of an answer, check to see if someone else can answer, or test the child by asking him to try it. If the question asks about something the child has never done, test, or make your best guess as to whether or not he could.

Remember that these questions are designed for children age 1 1/2 through age seven. Several questions refer to abilities the young child has not yet developed, so do not be surprised if there are many questions answered "no."

Date ____________________

Program ____________________

Center (name or location) ____________________

Teacher ____________________

Child's name ____________________

Birthdate ____________________

Comments:

Questions used with author's permission, from: Developmental Profile,
1972. Authors: Gerald D. Alpern
Thomas J. Boll, Ph.D.

L.47

## SCALE I

Circle the number in the "Yes" column for every question which the child, in your best judgment, can do. Circle the "0" in the "No" column for every question which he cannot or does not do.

| | | Yes | No |
|---|---|---|---|
| I-1 | Does the child go upstairs taking one stair with each foot? He must alternate going upstairs but may still be putting two feet on each step going downstairs. | 3 | 0 |
| I-2 | Does the child ride a 3-wheeler using the pedals for at least 10 feet and turning wide corners? | 3 | 0 |
| I-3 | If you were to draw a straight line for the child, could he copy it using a pencil, crayon, or paintbrush? (The question is whether the child has enough eye-hand ability to copy a line instead of just scribble.) | 3 | 0 |
| I-4 | Does the child jump with both feet together from a step or box (which is at least eight inches off the floor) without falling? (Try to observe.) | 3 | 0 |
| I-5 | Does the child use scissors with one hand to cut paper or cloth? The child must be able to use the scissors to cut rather than merely tear. | 3 | 0 |
| I-6 | Can the child hop on one foot for at least five feet? (Not in one hop!) | 3 | 0 |
| I-7 | Can the child throw a ball (any size) to an adult standing five feet away well enough so that the adult can catch it without having to move? | 3 | 0 |
| I-8 | Does the child release the latch and open an inside door? He must be able, for instance, to twist a doorknob and push open an unlocked bathroom door. | 3 | 0 |
| I-9 | Does the child catch a ball (any size) thrown by an adult standing five feet away? The child must catch the ball 50% of the time. | 6 | 0 |
| I-10 | Can the child hop on one foot for at least 10 feet without having to stop and start again? (Try to observe.) | 6 | 0 |
| I-11 | Can the child use a key to open and unlock a small padlock? | 6 | 0 |
| I-12 | Can the child make a snowball or mudball solid enough to stay together when thrown at least eight feet? The ability to throw a snowball or mudball eight feet is necessary to rate a pass. | 6 | 0 |
| I-13 | Does the child roller skate or ice skate? Skating means the child can push and glide with one foot after another. There can be occasional falls but most of the time the child can travel long distances without falling. | 6 | 0 |
| I-14 | Can the child cut out a magazine picture of an animal or human without being more than a quarter of an inch off anywhere? (Need to observe.) | 6 | 0 |
| I-15 | Can the child pick up and carry a kitchen or dining-room chair from one room to another? (Pushing or dragging does not rate a "yes.") | 6 | 0 |
| I-16 | Can the child catch a ball (tennis size) with one hand when thrown gently from at least six feet away? (The child must catch it at least 50% of the time.) (Size of ball is important on this.) | 6 | 0 |

## SCALE II

Circle the number in the "Yes" column for every question which the child, in your best judgment, can do. Circle the "0" in the "No" column for every question which he cannot or does not do.

| | | Yes | No |
|---|---|---|---|
| II-1 | Does the child take off his own coat without help when buttons or zippers are undone? | 3 | 0 |
| II-2 | Does the child use a fork for eating solid foods when a fork is available to him? He may prefer a spoon but has shown the ability to use a fork. | 3 | 0 |
| II-3 | Does the child understand and stay away from common dangers? He may take care not to fall on stairs or from high places, or he may show that he knows the danger of things such as broken glass, busy streets, or strange animals. | 3 | 0 |
| II-4 | Does the child completely feed himself using a fork and/or spoon and glass in the right way? | 3 | 0 |
| II-5 | Does the child undo large buttons, snaps, shoelaces, and zippers? | 3 | 0 |
| II-6 | Does the child put on his own shoes? It is not necessary that the child put them on the right feet or tie or fasten them to pass this item. | 3 | 0 |
| II-7 | Does the child care for his own toilet needs without help? This means that he must undress, wipe, and dress himself. The child does not have to be able to fasten back buttons or tie bows to rate a "yes" on this item. | 3 | 0 |
| II-8 | Does the child usually wash his own face and hands acceptably and dry them without help? | 3 | 0 |
| II-9 | Does the child dress himself completely except for tying shoelaces and other difficult fastenings? The child must manage regular shirt or blouse buttons and zippers. | 6 | 0 |
| II-10 | Can the child fix a bowl of dry cereal for himself? This must include getting the bowl and the cereal and pouring both cereal and milk into the bowl. | 6 | 0 |
| II-11 | Does child usually use a table knife for putting butter or jam on bread or crackers? | 6 | 0 |
| II-12 | Does the child answer the telephone and tell the person called the right message? The child must say "hello" and say whether the person called can come to the phone. | 6 | 0 |
| II-13 | Does the child use a knife correctly for cutting foods? He may be helped with unground meats such as steaks, roasts, chicken or chops. | 6 | 0 |
| II-14 | Does the child brush or comb his hair well enough so that adult help is not usually needed except for special times. | 6 | 0 |
| II-15 | Has the child, by himself, built or mended something requiring real tools such as needle and thread or hammer and nails? Adults may have helped only with directions, not any of the work. (Examples: Sewing up a seam or fixing a wagon.) | 6 | 0 |
| II-16 | Does the child wash himself acceptably without help? This means getting bath or shower ready and washing and drying himself completely. | 6 | 0 |

# SCALE III

Circle the number in the "Yes" column for every question which the child, in your best judgment, can do. Circle the "0" in the "No" column for every question which he cannot or does not do.

| | | Yes | No |
|---|---|---|---|
| III-1 | Is the child able to play with an easily breakable toy without destroying it right away? The toy may eventually be broken, but the child must show that he knows the right way to use the toy and be able to play with it once or twice without breaking it. | 3 | 0 |
| III-2 | Does the child seem interested in exploring new places such as a friend's house or places in his own home or yard which are new to him? Exploration with eyes alone is not sufficient for "yes" on this item. | 3 | 0 |
| III-3 | Does the child show he knows his own sex or the sex of others by telling what someone's sex is? He rates "yes" by showing he knows that certain clothes, activities, or toys usually go with one sex or another. (Uses boy, girl, etc.) | 3 | 0 |
| III-4 | Does the child like to help the parents around the house? Does he enjoy such activities as picking up from the floor, putting raked leaves in a basket, setting or clearing the table? | 3 | 0 |
| III-5 | Is the child able to take turns? Although he may need some help, he understands the idea of waiting for someone else to go first; he is able to allow others to go first before he takes his turn 75% of the time. | 3 | 0 |
| III-6 | Does the child know what toys can and cannot do and does he use them in a way that would not break them? For example, he does not drag a wagon on its top instead of its wheels, does not use a toy gun for chopping down a tree, and knows that cardboard toys cannot be stepped on. Any of these things may once in a while happen, but they don't usually happen. | 3 | 0 |
| III-7 | Does the child play with other children in group games such as tag, hide-and-seek, hopscotch, jumprope, marbles or other popular games without needing constant watching by an adult? | 3 | 0 |
| III-8 | Is the child able to keep "working" for at least 30 minutes with a similar-aged child in a single task such as making buildings or roads with blocks, logs, sand or mud or rearranging a room or area for doll-play such as store, school or house? | 3 | 0 |
| III-9 | Does the child draw a person so that an adult could tell what he drew? It need not be a whole man but should have a head and a body or a head and eyes, nose or mouth which any adult could recognize. (Try to observe.) | 6 | 0 |
| III-10 | Is the child allowed to play in his own neighborhood without being watched by an adult or babysitter? This does not mean the child is allowed to cross the street by himself. | 6 | 0 |
| III-11 | Boys: Does the boy engage in bike riding, ball throwing, playing at a creek or woods or field or hiking in a loosely-organized boy group?<br>Girls: Does she play with girlfriends at least once a week in some activity like house, shopping or nurse? No rules or scores are needed and the activity is just one where the child prefers to be with friends of his or her own sex. | 6 | 0 |
| III-12 | Does the child show he knows how others feel by saying things like "He is mad," "He is angry," "She is afraid," or "You are cranky?" The child must be usually right in the feelings he names in order to rate a "yes." | 6 | 0 |
| III-13 | Does the child have a friend to whom he will tell things he would not tell to parents or other adults? This does not mean merely acting silly with friends but rather telling secrets to another child that he does not want to talk about with adults. | 6 | 0 |
| III-14 | Does the child play easy table games such as checkers, Old Maid, Candy Land, or Lotto with a friend of about the same age? The child should be able to follow the rules, take turns, and have a "winner." | 6 | 0 |
| III-15 | Does the child have at least one real chore which he has to do at least weekly, such as washing dishes, mowing lawns, making a bed, taking out garbage cans, or some cleaning or dusting? This should be done well and usually without urging more than two times. | 6 | 0 |
| III-16 | Does the child know about voting as a way of deciding something? The child must understand that things are to be done in accordance with the way most of the people vote. | 6 | 0 |

## SCALE IV

Circle the number in the "Yes" column for every question which the child, in your best judgment, can do. Circle the "0" in the "No" column for every question which he cannot or does not do.

| | | Yes | No |
|---|---|---|---|
| IV-1 | Does the child name or point to at least 20 objects or pictures when they are named for him? | 3 | 0 |
| IV-2 | Does the child recognize himself in a photograph? | 3 | 0 |
| IV-3 | In the child's play does he ever group things together by color or form or size? | 3 | 0 |
| IV-4 | Does the child use size words (large, big, little, small) often and correctly? Only using the word in some game (e.g., how big is baby?) is not enough to rate a "yes." | 3 | 0 |
| IV-5 | Does the child understand the concept of three well enough so that he can hand you three pieces from a bowl of candy? | 3 | 0 |
| IV-6 | Does the child copy a picture of a circle? The child may make a mark going round and round. To pass, he has only to make a circular arm and hand movement. | 3 | 0 |
| IV-7 | Does the child count to six? That is, if there are six things in front of him and he is asked to tell how many, he can usually count them correctly. | 3 | 0 |
| IV-8 | Does the child draw a cross, one vertical and one intersecting horizontal line (+), after an adult makes one? | 3 | 0 |
| IV-9 | When asked to draw a person or when drawing a picture of a person on his own, does the child draw a head that looks like a head and at least one other part of the body? | 6 | 0 |
| IV-10 | Does the child draw or copy a square? The square must have right angle corners and the sides of the square should be about of equal size. | 6 | 0 |
| IV-11 | Has the child drawn a picture of a person that looked to an adult like a person? The drawing must have had the following bodily features: a trunk and arms or legs. Even if the trunk, arms and legs were shown in stick figure form the child should receive a "yes." | 6 | 0 |
| IV-12 | Does the child either copy or draw on his own a triangle? The sides of the triangle need not be exactly the same length but should be roughly so. | 6 | 0 |
| IV-13 | Could the child take out 13 objects from a group of 20 objects when asked? | 6 | 0 |
| IV-14 | Does the child know his address? In the city, he should be able to give his street and house number or he may name some well known place (apartment). Rural or isolated addresses may be more general, but should provide mailing information (e.g., road, box, or route number). The child need not know the name of his city or suburb. | 6 | 0 |
| IV-15 | Does the child print or write words using both capital and small letters correctly? These letters may be about the same size, but there should be a difference in form. | 6 | 0 |
| IV-16 | Can the child name the seven days of the week and also answer which day comes before and after any given day? For example, the child must be able to tell you what day comes before and after Thursday. | 6 | 0 |

## SCALE V

Circle the number in the "Yes" column for every question which the child, in your best judgment, can do. Circle the "0" in the "No" column for every question which he cannot or does not do.

| | | Yes | No |
|---|---|---|---|
| V-1 | Does the child use at least 15 different words in the right way? | 3 | 0 |
| V-2 | Does the child put two or more words together to form sentences? "Me go," "You give," "Tom want," are all examples of passes. But, if the child always uses the two words together (so that they are really one word to him), then this should be answered "no." | 3 | 0 |
| V-3 | Does the child name (not just repeat) at least 20 things seen in pictures? | 3 | 0 |
| V-4 | Does the child use at least 50 different words when he speaks? He must use these words, not just understand them when spoken by others. | 3 | 0 |
| V-5 | Does the child sometimes give his first and last name when asked? The child may not do this all or even most of the time, but must have done it when asked. | 3 | 0 |
| V-6 | Does the child answer correctly when asked if he or she is a boy or girl? | 3 | 0 |
| V-7 | Can the child tell a story as he looks at the pictures in a book? The story must be what is pictured as he goes through the book, although he may leave out parts of the story not shown by the pictures. | 3 | 0 |
| V-8 | Has the child talked with someone on the telephone? For a "yes" the child must have listened for talk from the other end and waited until the other person stopped talking before answering or speaking. | 3 | 0 |
| V-9 | Has the child sung a song of at least 30 words? Many of the words can be repeated in the song, but it must have been sung all by himself. | 6 | 0 |
| V-10 | Can the child tell people (by speaking or holding up fingers) how old he is now, how old he was last year, and how old he will be next year? | 6 | 0 |
| V-11 | Does the child tell (without pictures for help) a story such as "Little Red Riding Hood" or "The Three Bears"? The child must tell all the important parts of the story. | 6 | 0 |
| V-12 | When arguing, has the child sometimes used logic about cause and effect? He may use the words "because" or "since." For example, "I ought to be able to watch T. V. later tonight because there is no school tomorrow." This is acceptable as it shows cause and effect logic. | 6 | 0 |
| V-13 | Can the child recognize at least five written words and somehow show he understands what they mean? The child must "read" the words not just name the things like recognizing a cereal box and naming the cereal. | 6 | 0 |
| V-14 | Does the child recite the entire "Pledge of Allegiance" or something like it? The child must have learned some formal prayer or poem of at least 25 mostly non-repeated words. Songs cannot be used to pass this item. | 6 | 0 |
| V-15 | Does the child read aloud (really reading the words) a simple story so that someone who is only listening can follow the story? | 6 | 0 |
| V-16 | Could the child retell (using about five minutes) the plot of a story, play or T. V. show he watched? The child must be able to tell the whole story (not exciting bits of action) in enough detail to require five minutes. | 6 | 0 |

# CALIFORNIA PRESCHOOL SOCIAL COMPETENCY SCALE

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### 1. IDENTIFICATION

1. Can state first name only.
2. Can state full name.
3. Can state full name and age as of last birthday.
4. Can state name, age, and address.

### 2. USING NAMES OF OTHERS

1. Uses no proper names in interacting with those around him.
2. Uses the names of no more than five children or adults.
3. Uses the names of from five to ten children.
4. Uses the names of virtually all children and adults.

### 3. GREETING NEW CHILD

When a new child joins the group—

1. He inadvertently physically overpowers child in greeting him (i.e., hugs, bumps, pulls).
2. He makes a limited and brief physical contact (i.e., pats, pokes, rubs) with child and some verbal contact.
3. He usually makes verbal contact and sometimes touches child.
4. He nearly always makes verbal contact with child without physical contact.

### 4. SAFE USE OF EQUIPMENT

1. He proceeds with activity, ignoring hazards involving height, weight, and distance (climbing on unstable equipment, stacking boxes too high, jumping onto off-balanced structures).
2. He proceeds with hazardous activity, sometimes seeking help and sometimes getting into difficulty.
3. He proceeds with hazardous activity but frequently seeks help when he is in difficulty.
4. He corrects hazards or seeks help before proceeding with activity.

### 5. REPORTING ACCIDENTS

When he has an accident (e.g., spilling, breaking)—

1. He does not report accidents.
2. He sometimes reports accidents.
3. He frequently reports accidents.
4. He nearly always reports accidents.

### 6. CONTINUING IN ACTIVITIES

1. He wanders from activity to activity with no sustained participation.
2. He continues in his own activity but is easily diverted when he notices activities of others.
3. He continues in his own activity and leaves it only when he is interrupted by others.
4. He continues in his own activity in spite of interruptions.

### 7. PERFORMING TASKS

1. He usually has to be asked two or three times before he will begin a task.
2. He usually begins task the first time he is asked but dawdles and has to be reminded.
3. He begins task the first time he is asked but is slow in completing task.
4. He begins task first time he is asked and is prompt in completing task.

### 8. FOLLOWING VERBAL INSTRUCTIONS

He can follow verbal instructions—

1. When they are accompanied by demonstration.
2. Without a demonstration, if one specific instruction is involved.
3. Without a demonstration, when it involves two specific instructions.
4. Without a demonstration, when it involves three or more instructions.

### 9. FOLLOWING NEW INSTRUCTIONS

1. He carries out one familiar instruction.
2. He carries out one new instruction the first time it is given.
3. He follows new instructions given one at a time, as well as familiar ones.
4. He follows several new instructions given at a time, as well as familiar ones.

### 10. REMEMBERING INSTRUCTIONS

1. He nearly always needs to have instructions or demonstration repeated before he can perform the activity on his own.
2. He frequently requires repetition, a reminder, or affirmation that he is proceeding correctly.
3. He occasionally needs repetition of instruction for part of the activity before completing the activity.
4. He performs the activity without requiring repetition of instructions.

### 11. MAKING EXPLANATION TO OTHER CHILDREN

When attempting to explain to another child how to do something (put things together, play a game, etc.)—

1. He is unable to do so.
2. He gives an incomplete explanation.
3. He gives a complete but general explanation.
4. He gives a complete explanation with specific details.

### 12. COMMUNICATING WANTS

1. He seldom verbalizes his wants; acts out by pointing, pulling, crying, etc.
2. He sometimes verbalizes but usually combines actions with words.
3. He usually verbalizes but sometimes acts out his wants.
4. He nearly always verbalizes his wants.

### 13. BORROWING

1. He takes objects when in use by others without asking permission.
2. He sometimes asks permission to use other's objects.
3. He frequently asks permission to use other's objects.
4. He nearly always asks permission to use other's objects.

### 14. RETURNING PROPERTY

When he has borrowed something—

1. He seldom attempts to return the property to its owner.
2. He occasionally attempts to return the property to its owner.
3. He frequently attempts to return the property to its owner.
4. He nearly always returns the property to its owner.

### 15. SHARING

1. He does not share equipment or toys.
2. He shares but only after adult intervention.
3. He occasionally shares willingly with other children.
4. He frequently shares willingly with other children.

### HELPING OTHERS

When another child is having difficulty (such as using equipment, dressing)—

1. He never helps the other child.
2. He helps another child only when they are playing together.
3. He sometimes stops his own play to help another child.
4. He frequently stops his own play to help another child.

### 17. PLAYING WITH OTHERS

1. He usually plays by himself.
2. He plays with others but limits play to one or two children.
3. He occasionally plays with a larger group (three or more children).
4. He usually plays with a larger group (three or more children).

### 1. INITIATING INVOLVEMENT

When other children are involved in an activity which permits the inclusion of additional children—

1. He seldom initiates getting involved in the activity.
2. He sometimes initiates getting involved in the activity.
3. He frequently initiates getting involved in the activity.
4. He nearly always initiates getting involved in the activity.

### INITIATING GROUP ACTIVITIES

1. He nearly always initiates activities which are solely for his his own play.
2. He initiates his own activities and allows one child to join him.
3. He sometimes initiates activities which include two or more children.
4. He frequently initiates activities which are of a group nature.

### 20. GIVING DIRECTION TO PLAY

When playing with others—

1. He typically follows the lead of others.
2. He sometimes makes suggestions for the direction of the play.
3. He frequently makes suggestions for the direction of the play.
4. He nearly always makes suggestions for the direction of the play.

### TAKING TURNS

1. He frequently interrupts or pushes others to get ahead of them in an activity taking turns.
2. He attempts to take turn ahead of time but does not push or quarrel in order to do so.
3. He waits for turn, but teases or pushes those ahead of him.
4. He waits for turn or waits to be called on.

### REACTION TO FRUSTRATION

When he does not get what he wants or things are not going well—

1. He has a tantrum (screams, kicks, throws, etc.).
2. He finds a substitute activity without seeking help in solving the problem.
3. He seeks help from others in solving problem without making an attempt to solve it himself.
4. He seeks help from others in solving the problem after making an effort to solve it himself.

### 23. DEPENDENCE UPON ADULTS

He will continue in an activity on his own without having an adult participate with him or encourage him—

1. Hardly ever.
2. Sometimes.
3. Frequently.
4. Nearly always.

### 24. ACCEPTING LIMITS

When an adult sets limits on the child's activity (play space, use of material, type of activity) he accepts the limits—

1. Hardly ever.
2. Sometimes.
3. Frequently.
4. Nearly always.

### 25. EFFECTING TRANSITIONS

In changing from one activity to another—

1. He requires personal contact by adult (i.e., holding hands, leading).
2. He will not move toward new activity until the physical arrangements have been completed.
3. He moves toward new activity when the teacher announces the activity.
4. He moves toward new activity without physical or verbal cues.

### 26. CHANGES IN ROUTINE

The child accepts changes in routine (daily schedule, room arrangements, adults) without resistance or becoming upset—

1. Hardly ever.
2. Sometimes.
3. Frequently.
4. Nearly always.

### 27. REASSURANCE IN PUBLIC PLACES

When taken to public places he must be given physical or verbal reassurance—

1. Nearly always.
2. Frequently.
3. Sometimes.
4. Hardly ever.

### 28. RESPONSE TO UNFAMILIAR ADULTS

1. He avoids or withdraws from any contact with unfamiliar adults.
2. He, when initially approached by unfamiliar adults, avoids contact, but if approached again, is responsive.
3. He responds to overtures by unfamiliar adults but does not initiate contact.
4. He readily moves toward unfamiliar adults.

### 29. UNFAMILIAR SITUATIONS

1. He restricts himself to activities in which he has previously engaged.
2. He joins in an activity which is new for him only if other children are engaged in it.
3. He joins with other children in an activity which is new to everyone.
4. He engages in an activity which is new for him even though other children are not involved.

### 30. SEEKING HELP

When he is involved in an activity in which he needs help—

1. He leaves the activity without seeking help.
2. He continues in the activity but only if help is offered.
3. He persists in the activity and finally seeks help.
4. He seeks help from others after making a brief attempt.

TOTAL SCORE ________

## PRETEST/POSTTEST ITEM MEANS AND STANDARD DEVIATIONS, CALIFORNIA PRESCHOOL SOCIAL COMPETENCY SCALE

| Item | H.S. Pretest X̄ | H.S. Pretest SD | H.S. Posttest X̄ | H.S. Posttest SD | N.H.S. Pretest X̄ | N.H.S. Pretest SD | N.H.S. Posttest X̄ | N.H.S. Posttest SD |
|---|---|---|---|---|---|---|---|---|
| 1 | 1.95 | 1.09 | 2.21 | 1.38 | 1.54 | 1.31 | 1.68 | 1.47 |
| 2 | 2.54 | 1.33 | 2.80 | 1.50 | 2.13 | 1.48 | 2.27 | 1.61 |
| 3 | 2.31 | 1.16 | 2.32 | 1.38 | 2.01 | 1.31 | 1.88 | 1.43 |
| 4 | 2.36 | 1.23 | 2.36 | 1.40 | 2.04 | 1.30 | 1.96 | 1.43 |
| 5 | 2.50 | 1.25 | 2.46 | 1.39 | 2.04 | 1.30 | 2.03 | 1.43 |
| 6 | 2.23 | 1.07 | 2.22 | 1.22 | 2.07 | 1.02 | 2.04 | 1.19 |
| 7 | 2.29 | 1.18 | 2.23 | 1.30 | 1.91 | 1.16 | 1.92 | 1.27 |
| 8 | 1.83 | 1.03 | 1.95 | 1.20 | 1.78 | 1.0 | 1.92 | 1.26 |
| 9 | 2.00 | 1.08 | 2.10 | 1.23 | 1.72 | 1.11 | 1.84 | 1.23 |
| 10 | 2.18 | 1.02 | 2.07 | 1.23 | 1.90 | 1.05 | 1.92 | 1.15 |
| 11 | 1.96 | 1.09 | 1.97 | 1.19 | 1.54 | 1.03 | 1.56 | 1.16 |
| 12 | 2.54 | 1.25 | 2.54 | 1.39 | 2.17 | 1.26 | 2.24 | 1.42 |
| 13 | 2.04 | 1.22 | 2.08 | 1.35 | 1.54 | 1.14 | 1.61 | 1.25 |
| 14 | 2.07 | 1.22 | 2.09 | 1.34 | 1.56 | 1.16 | 1.59 | 1.29 |
| 15 | 2.77 | 1.02 | 2.72 | 1.21 | 2.33 | 1.15 | 2.02 | 1.33 |
| 16 | 2.22 | 1.02 | 2.20 | 1.20 | 1.84 | 1.13 | 1.89 | 1.33 |
| 17 | 2.41 | 1.05 | 2.33 | 1.22 | 2.00 | 1.0 | 2.00 | 1.21 |
| 18 | 2.26 | 1.04 | 2.22 | 1.25 | 1.92 | 1.11 | 2.00 | 1.25 |
| 19 | 2.22 | 1.08 | 2.20 | 1.21 | 1.67 | 1.05 | 1.78 | 1.24 |
| 20 | 1.69 | 1.00 | 1.70 | 1.15 | 1.47 | 1.09 | 1.55 | 1.26 |
| 21 | 2.51 | 1.29 | 2.23 | 1.43 | 2.08 | 1.46 | 1.98 | 1.53 |
| 22 | 2.37 | 1.19 | 2.32 | 1.36 | 2.02 | 1.20 | 2.03 | 1.33 |
| 23 | 2.45 | 1.00 | 2.35 | 1.20 | 2.19 | 1.04 | 2.05 | 1.16 |
| 24 | 2.73 | 1.12 | 2.60 | 1.26 | 2.51 | 1.13 | 2.38 | 1.29 |
| 25 | 2.38 | 1.08 | 2.32 | 1.28 | 2.11 | 1.05 | 2.08 | 1.22 |
| 26 | 3.07 | 1.13 | 2.85 | 1.32 | 3.00 | 1.12 | 2.76 | 1.34 |
| 27 | 2.76 | 1.24 | 2.68 | 1.34 | 2.54 | 1.33 | 2.42 | 1.44 |
| 28 | 2.72 | 1.06 | 2.50 | 1.25 | 2.53 | 1.18 | 2.51 | 1.31 |
| 29 | 2.52 | 1.11 | 2.43 | 1.25 | 2.40 | 1.25 | 2.26 | 1.44 |
| 30 | 2.29 | 1.22 | 2.32 | 1.34 | 2.15 | 1.30 | 2.07 | 1.39 |

# APPENDIX M

## ITEMS INCLUDED IN APPLIED MANAGEMENT SCIENCES' "ATTITUDES TOWARD MAINSTREAMING" SCALES

## I. ITEMS INCLUDED IN SCALE I (GENERAL ATTITUDES TOWARD MAINSTREAMING):

I like to work with handicapped children.

I think mainstreaming is harmful to normal children.

I feel mainstreaming is harmful to many handicapped children.

It seems to me that handicapped children learn more in special classes that do not include normal children.

I feel that handicapped children need to be made aware of their limitations.

I am afraid of working with some handicapped children.

It seems to me that handicapped children tend to "give up" in the regular classroom setting.

The integration of handicapped children in regular classes slows down the learning of the other children in my class.

Handicapped children are more like normal children than they are different.

I think that normal and handicapped children get along well with one another.

It seems to me that handicapped children are withdrawn around the normal children in the class.

I think normal children do not try as hard around handicapped children.

Being in the same class with normal children helps the social development of handicapped children.

## II. ITEMS INCLUDED IN SCALE II (PERCEPTIONS OF BARRIERS TO IMPLEMENTING A MAINSTREAM PROGRAM):

Working with handicapped children takes too much classroom time away from normal children.

It's hard for me to make handicapped children feel "at home" in my class.

For me working with handicapped children id difficult in a regular classroom setting.

II: ITEMS INCLUDED IN SCALE II (PERCEPTIONS OF BARRIERS TO IMPLEMENTING A MAINSTREAM PROGRAM)(continued)

Planning instruction for both handicapped and normal children demands too much additional teacher preparation time.

I think handicapped children should be mainstreamed, but they should have teachers with more special training than I have.

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